

CS8000F

SERVICE MANUAL

Canon

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CANOSCAN 8000F

SERVICE MANUAL

REVISION 0

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I. SPECIFICATIONS

Scanner Main Unit

Type : Flatbed image scanner

Scanning Part

Image sensor	: 10,680-pixel 6-line CCD
Light source	: Cold cathode fluorescent lamp
Document type	: Sheet, Book
Document alignment position	: Right-end corner
Max. document size	: A4/Letter size (216 x 297mm)
Image output mode	: Color 16-bit for RGB each Grayscale (256 gradations) Binary (black and white)
Optical resolution	: 2400 dpi x 4800 dpi
Scanning time	: 5.4ms/line (600 dpi or lower) 10.8ms/line (601 dpi or higher)

Film Scanning Part

Film type	: Color and monochrome, negative and positive
Film size	: 35mm sleeve (6 frames x 2) 35mm slide mount (4 frames)
Light source	: Cold cathode fluorescent lamp IR LED (for FARE function)
Scanning time	: 5.4 to 172.8ms/line (automatically selected depending on films)

Interface Part

Interface	: USB connector (Universal Serial Bus 2.0) FAU connector (6-pin) Power connector (for AC adapter)
-----------	---

Front Panel

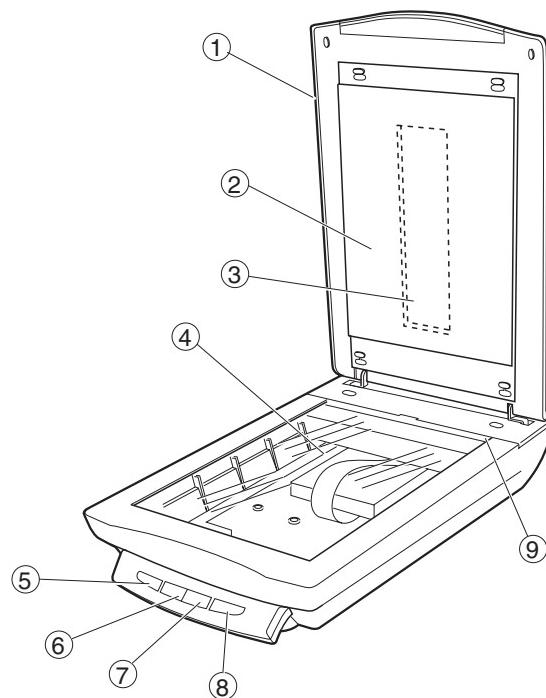
Scanner button	: 4 buttons (COPY, SCAN, FILE, E-MAIL) on the scanner unit
----------------	--

Others

Operating environment	: Temperature : 10 to 35 degrees Relative humidity : 10 to 90%RH Air pressure : 613 to 1013 hPa
Power source	: 100V to 120V 220V to 240V
Power consumption	: 15W max. (during operation) 10W (during standby)
Dimensions	: 284.0 (Width) x 498.0 (Depth) x 104.0 (Height) mm (Height to the document glass: 72.0mm)
Weight	: Approximately 4.6kg

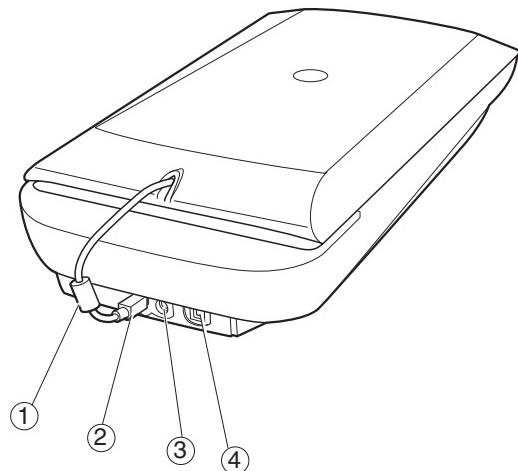
II. PARTS CONFIGURATION

A. Front View

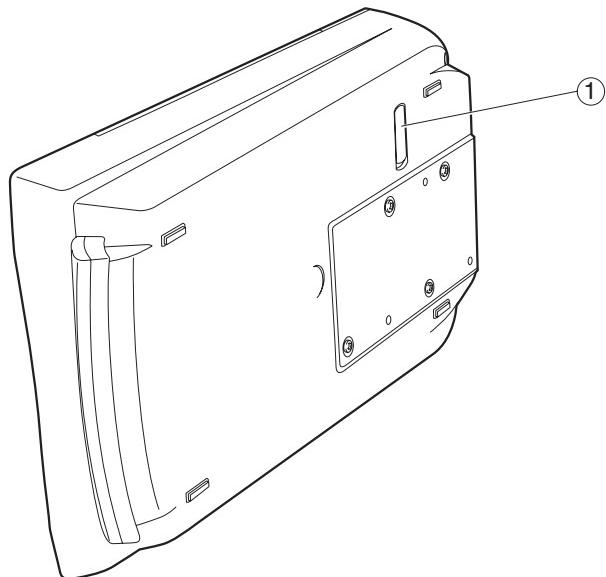


- ① Document Cover
- ② Protective Sheet
- ③ Film Adapter Unit
- ④ Document Glass
- ⑤ COPY Button
- ⑥ SCAN Button
- ⑦ FILE Button
- ⑧ E-MAIL Button
- ⑨ Alignment Mark

Figure 1-1

B. Back View

- ① FAU Cable
- ② FAU Connector
- ③ Power Connector
- ④ USB Connector

Figure 1-2**C. Rear View**

- ① Lock Switch

Figure 1-3

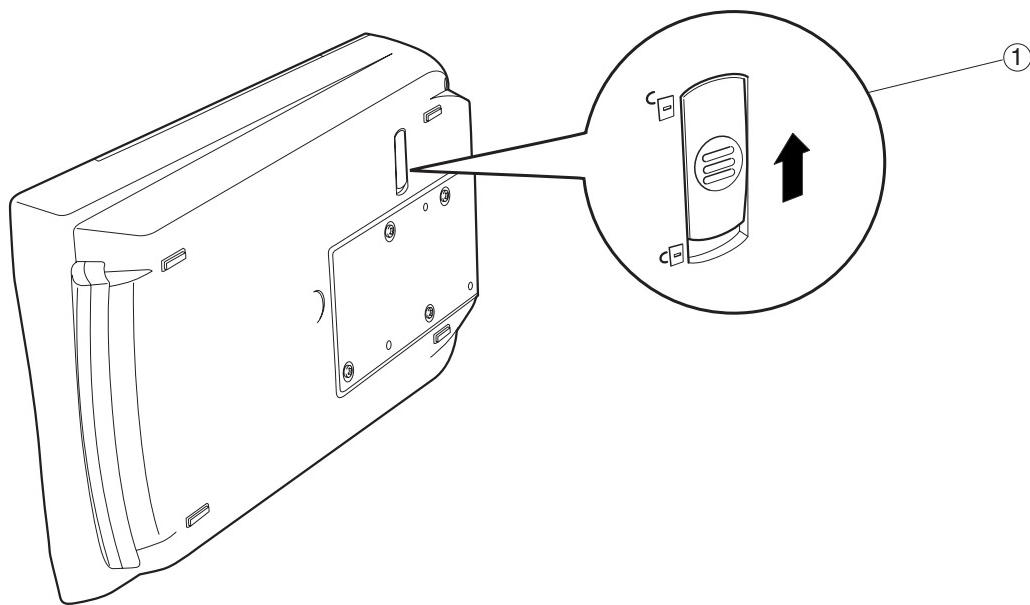
III. SETTING UP THE SCANNER

A. Precautions

- * Keep the scanner out of direct sunlight. Direct exposure to the sun or excessive heat may cause damage to the scanner.
- * Do not install the scanner in a humid or dusty environment.
- * Use the supplied AC adapter only.
- * Place the scanner securely on an even, flat surface. Tilted or uneven surface may cause a mechanical problem.
- * Keep the outer carton and packing material in case you may ship the scanner in the future.

B. Unlocking the Lock Switch

Scanning unit is locked by the lock switch to prevent a damage during transport. Unlock the lock switch by pushing it toward the “unlock” mark to use the scanner.



① Lock Switch

Figure 1-4

Note : Ensure to lock the lock switch during transport.

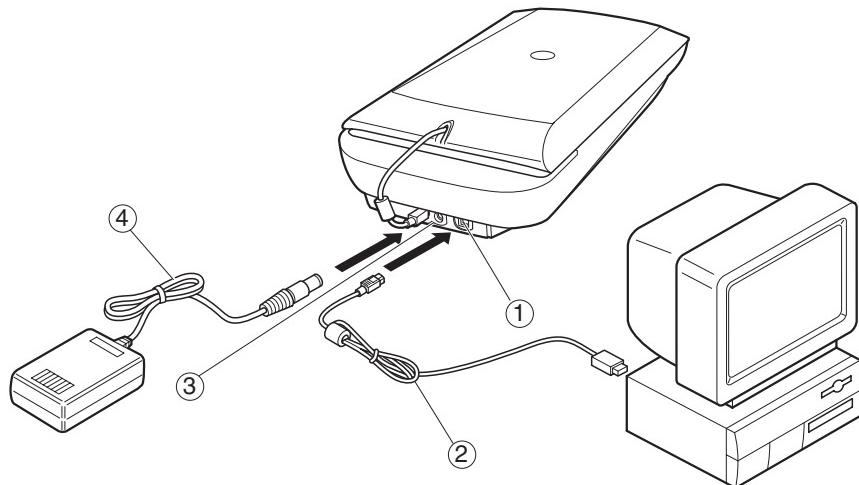
C. Connecting the Cables

CanoScan 8000F is used by connected to the USB port on the host computer. Refer to the "Quick Start Guide" supplied with the product for details. For connecting the host computer's cables, refer to the manuals for the host computer.

Note: Install the device driver before connecting the cables to use the scanner.

1. Connecting the FAU Cable, USB Cable and AC Adapter Cable

- 1) Connect the FAU cable to the FAU connector.
- 2) Connect the square connector (B plug) of the USB cable to the USB connector on the scanner, and connect the flat connector (A plug) of the USB cable to the USB port on the host computer.
- 3) Connect the AC adapter cable to the power connector on the scanner.



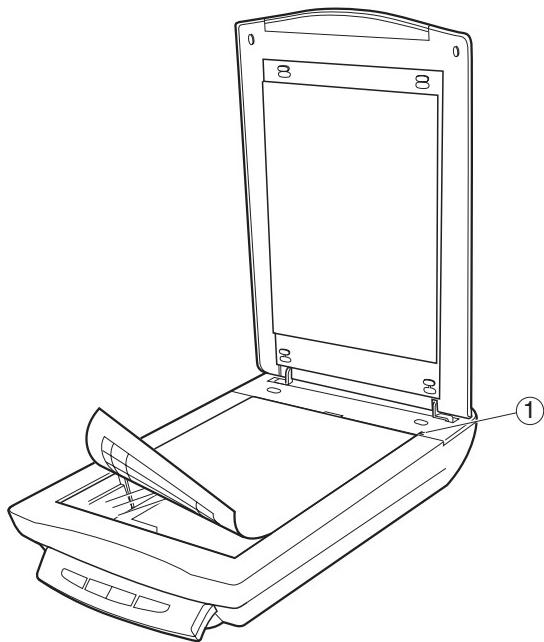
- ① USB Connector
- ② USB Cable
- ③ Power Connector
- ④ AC Adapter

Figure 1-5

D. Scanning

1. Scanning an Original

- 1) Place an original face down on the document glass by aligning its top edge with the alignment mark.



① Alignment Mark

Figure 1-6

- 2) Close the document cover caring not to displace the original.
- 3) Send the scan command from the host computer.

2. Scanning Film

- 1) Slide the protective sheet up to remove it from the document cover.

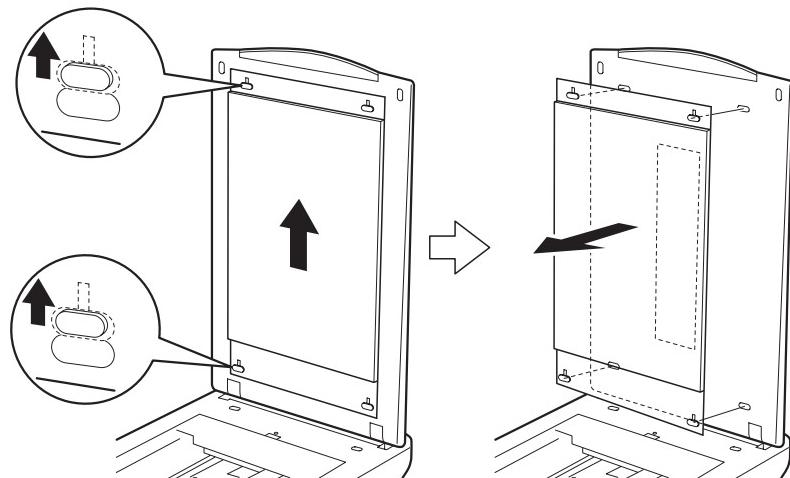


Figure 1-7

- 2) Insert the film into the film guide.

* Film strips

Open the film holder on the film guide for film strips, insert the strip(s) face down and close the film holder.

* Slides

Place a slide face down in the film guide for slides.

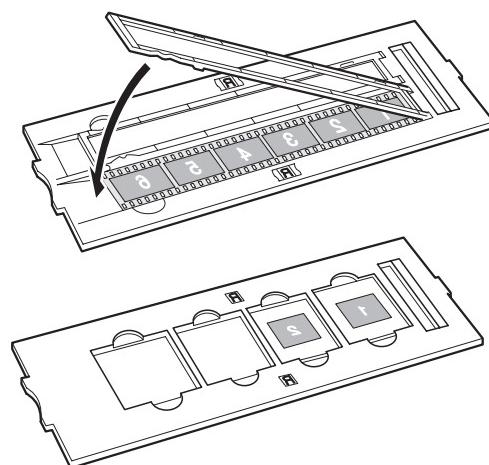
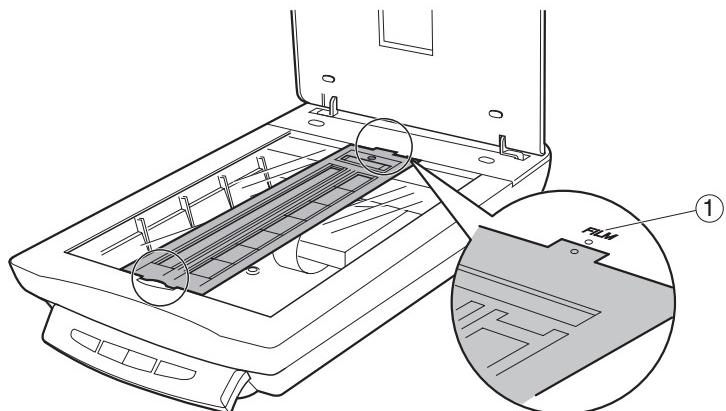


Figure 1-8

- 3) Place the loaded film guide by aligning its leading tab with FILM mark on the document glass and close the document cover.



(1) FILM Mark

Figure 1-9

- 4) Send the scan command from the host computer.

IV. CUSTOMER'S DAILY MAINTENANCE

Dirt on the document glass may cause an unclear image or lines on an image. Clean the document glass using the following steps.

- 1) Disconnect all cables from the scanner.
- 2) Wipe a dirt off the document glass with a soft clean cloth dampened with water and well wrung.
- 3) Thoroughly wipe water off the document glass with a dry cloth.

CHAPTER 2

OPERATION AND TIMING

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I. BASIC OPERATION

A. Functions

The scanner functions are divided into optical system, image processing system, and control system.

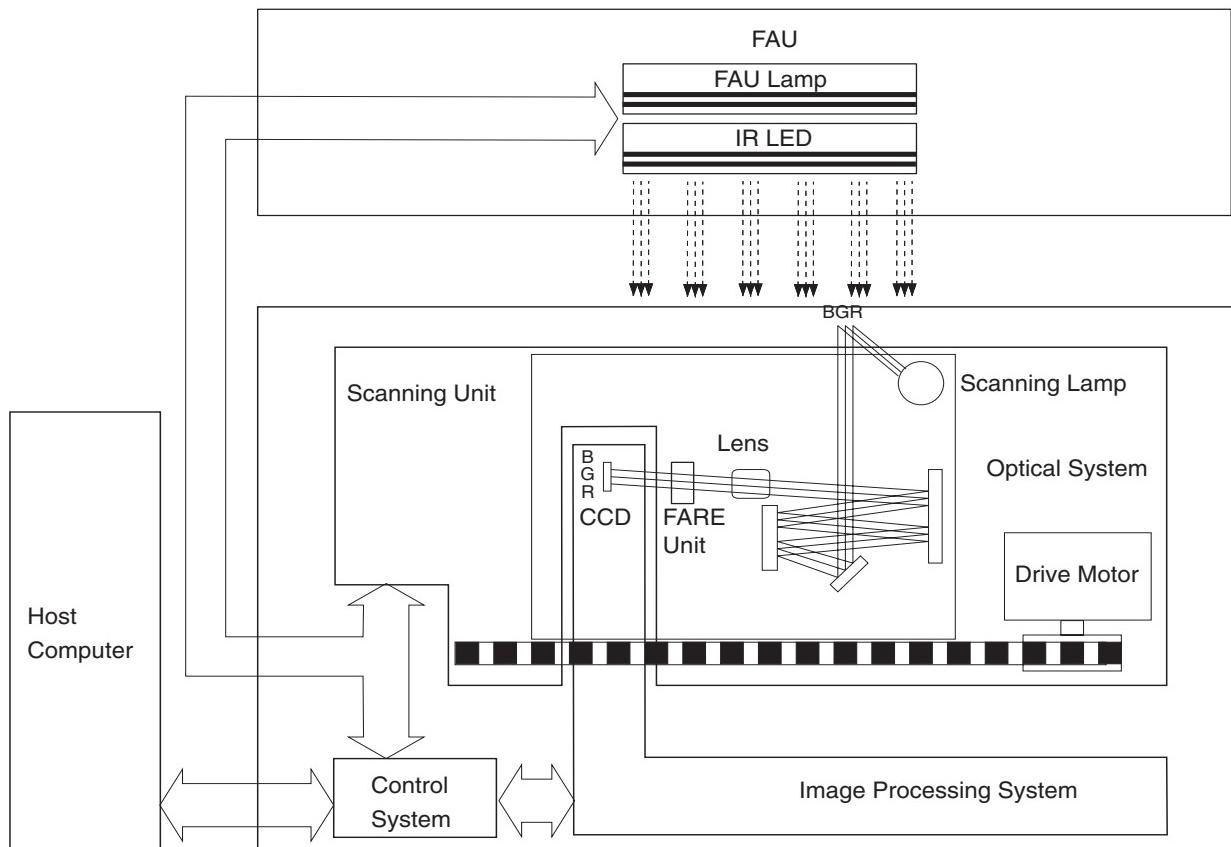


Figure 2-1

B. Electrical System

1. Outline

The scanner is not equipped with CPU. The device driver installed in the host computer includes a control program, which functions as CPU. Host computer sends a command to the ASIC via the USB controller, the ASIC controls the whole electrical circuits and image processing of the scanner. The image signals read by the CCD are converted into digital data by analog IC. The digital data is then processed by the ASIC and output to the host computer via USB interface.

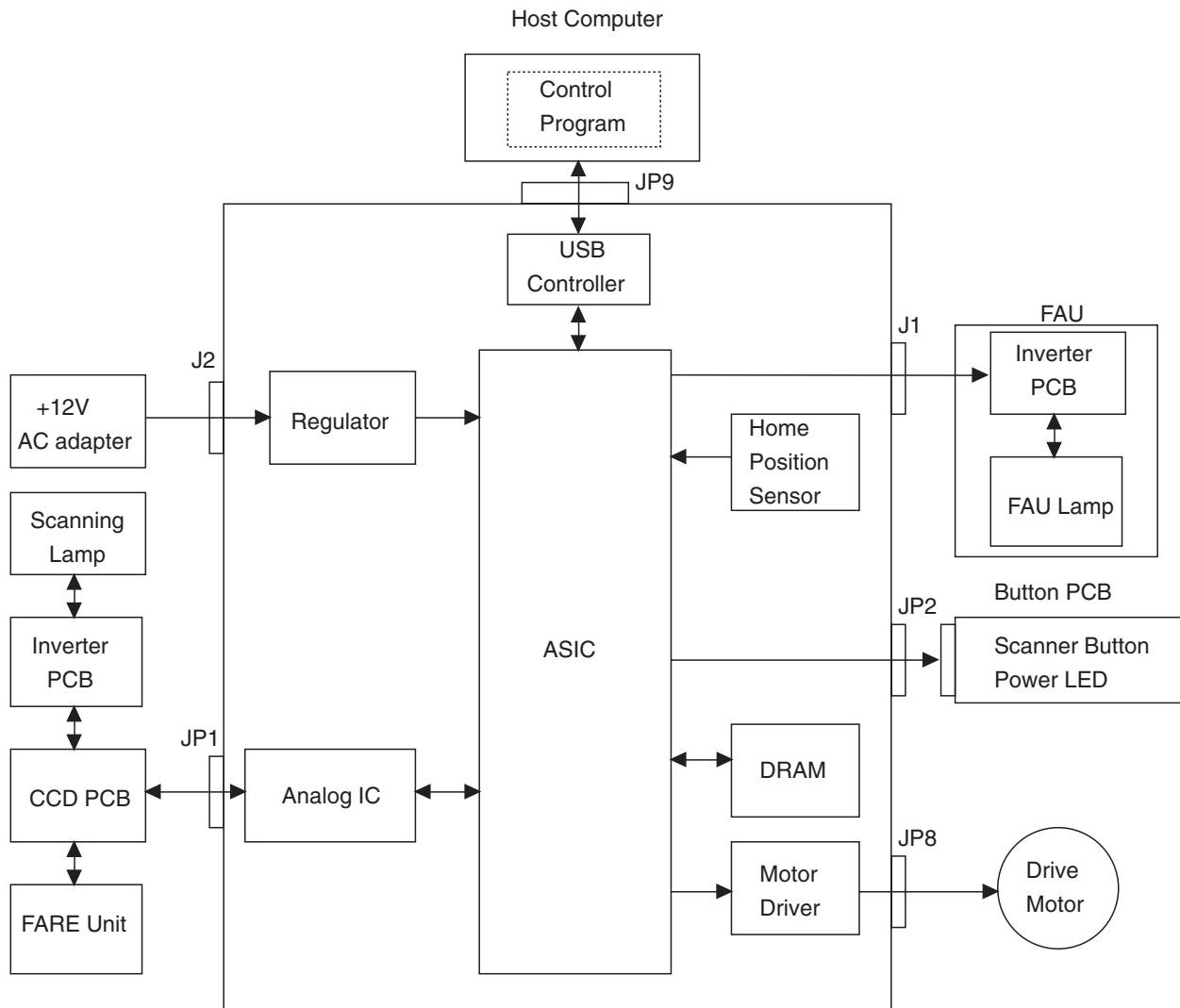


Figure 2-2

2. Functions of the Main PCB

1) Analog IC

Converts the image signals (analog signals) read by the CCD into digital data.

- CDS (Correlated Double Sampling)
- AGC (Auto Gain Control)
- 8-bit A/D converter

2) ASIC

Performs various processings:

- DRAM control
- CCD timing clock creation
- Line buffer control
- CCD output line difference adjustment
- Image processing
- Shading correction
- Motor driver control

3) DRAM

Stores the shading correction data when performing shading correction, and the image data when scanning.

4) Motor Driver

Supplies power to the drive motor.

5) USB Controller

Controls data transfer between the host computer and ASIC.

C. Main PCB Input and Output

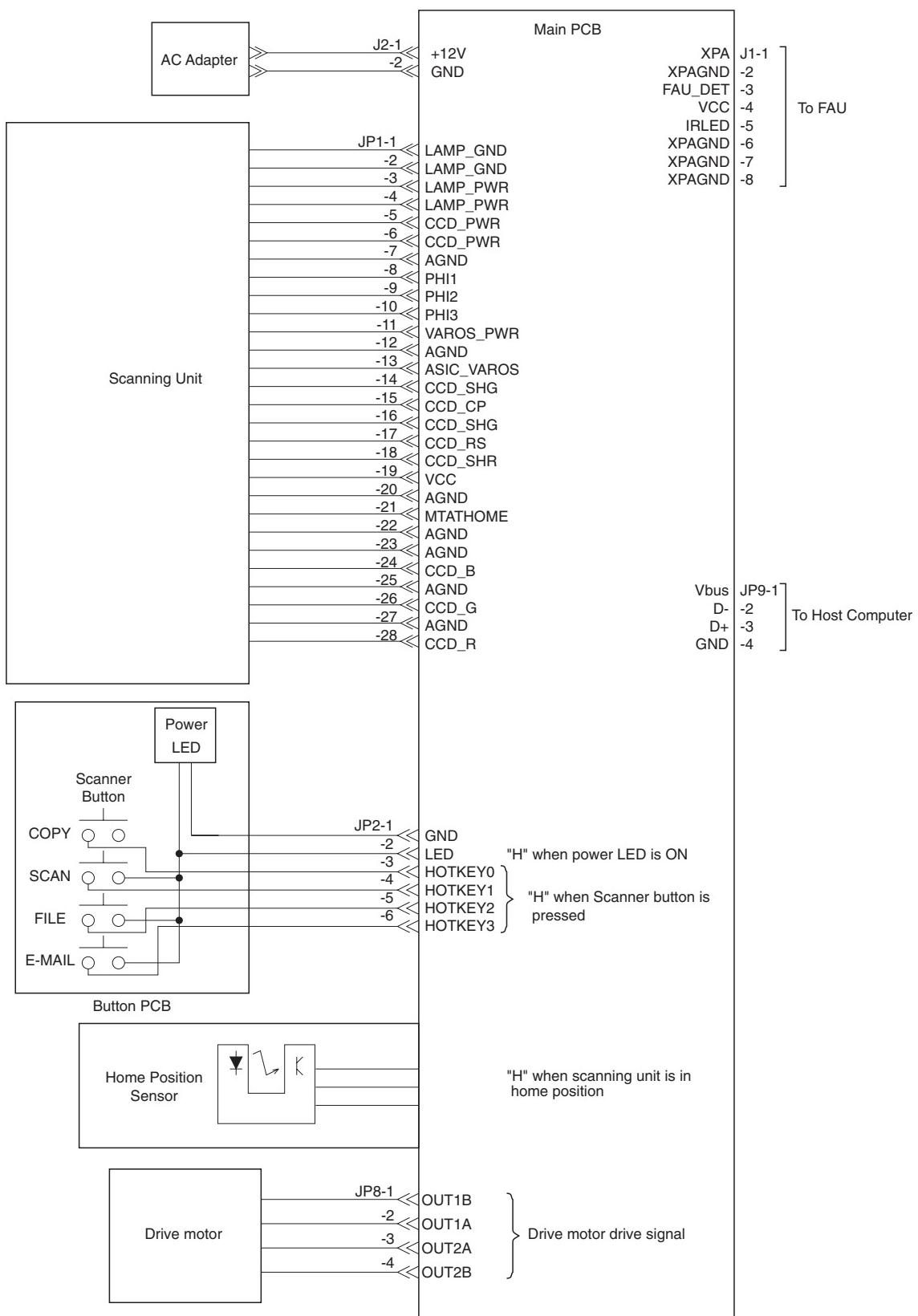
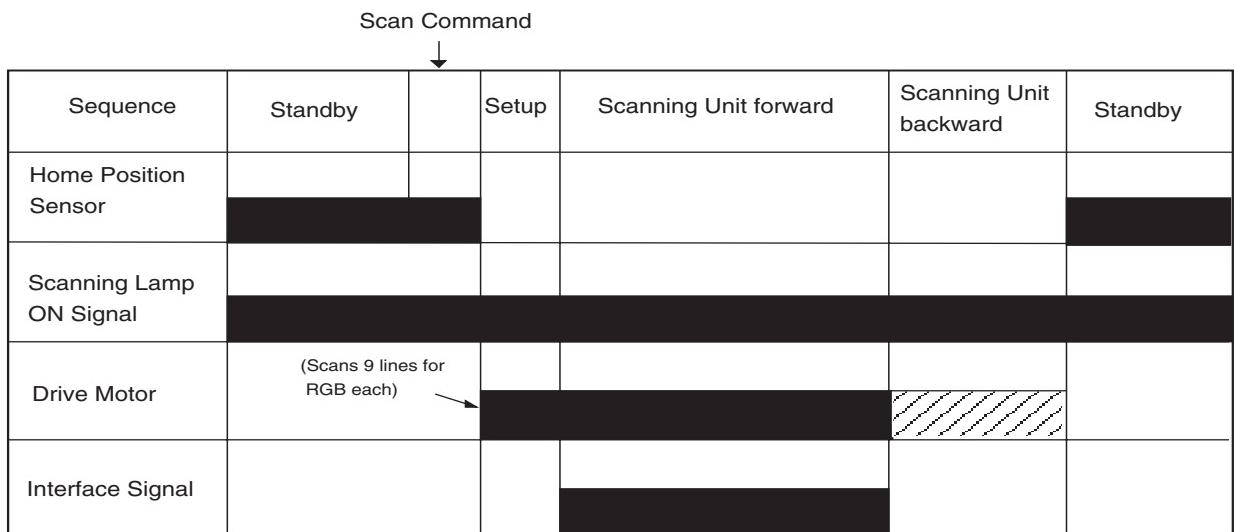


Figure 2-3

D. Document Scanning Sequence**Figure 2-4**

Seqence	Operation	Purpose	Remarks
Standby	After the scanner self test is completed until the scanner receives a scan command from the host computer	To maintain the scanner ready for scan	
Setup	From the scanner receives a scan command until it starts scanning	To execute calibration for setting light exposure time, gain data and shading data	The data is stored in DRAM
Scanning Unit Forward	After the scanner starts scanning until whole scan area specified by the host computer is scanned	To execute image processing according to the command from the host computer while scanning and send imada data to the host computer	
Scanning Unit backward	After the scanning unit starts moving backward until it returns to the home position	To return the scanning unit to the home position to ready for the next scan	Home position is detected by the home position sensor

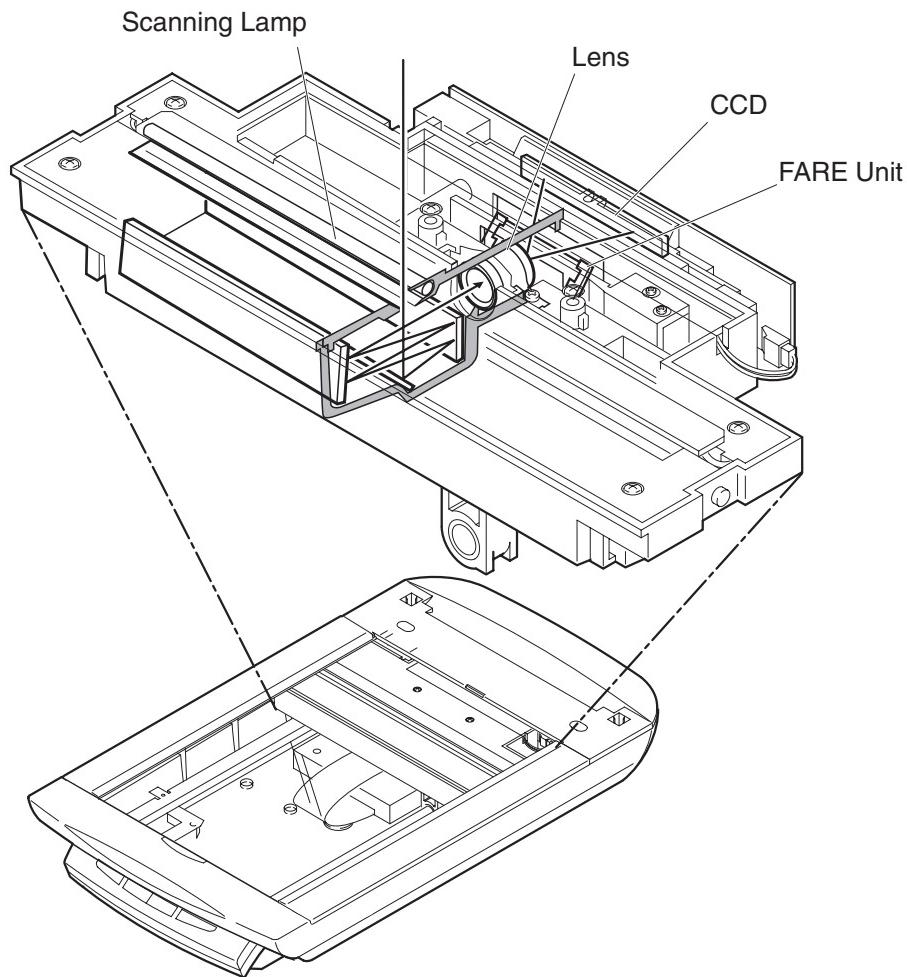
Table 2-1

II. OPTICAL SYSTEM**A. Outline**

The optical system consists of the scanning lamp, lens and mirrors. When scanning a reflective document, the scanning lamp in the scanning unit exposes the document and focuses the reflected light from the document on the light-sensitive device CCD (charge-coupled device) via the lens and mirrors.

When scanning a film, FAU lamp in the Film Adapter Unit transmits the film and focuses the transmitted light on the CCD.

When using FARE function, infrared LED transmits a film after FAU lamp does, and FARE unit operates to scan the film.

**Figure 2-5**

B. Lamp Lighting Circuit

1. Scanning Lamp Lighting Circuit

When the scanner is powered on, or the host computer sends a scan command, ASIC turns the scanning lamp lighting signal (LAMP) ON to light the scanning lamp.

The reflected light from the document is focused on the light-sensitive device CCD (charge-coupled device) via the five mirrors, lens and FARE unit.

The scanner is provided with a lamp OFF function for energy saving. A built-in timer to be set by the device driver is counted during lamp ON and turns the scanning lamp OFF when no scan command is sent for a certain period.

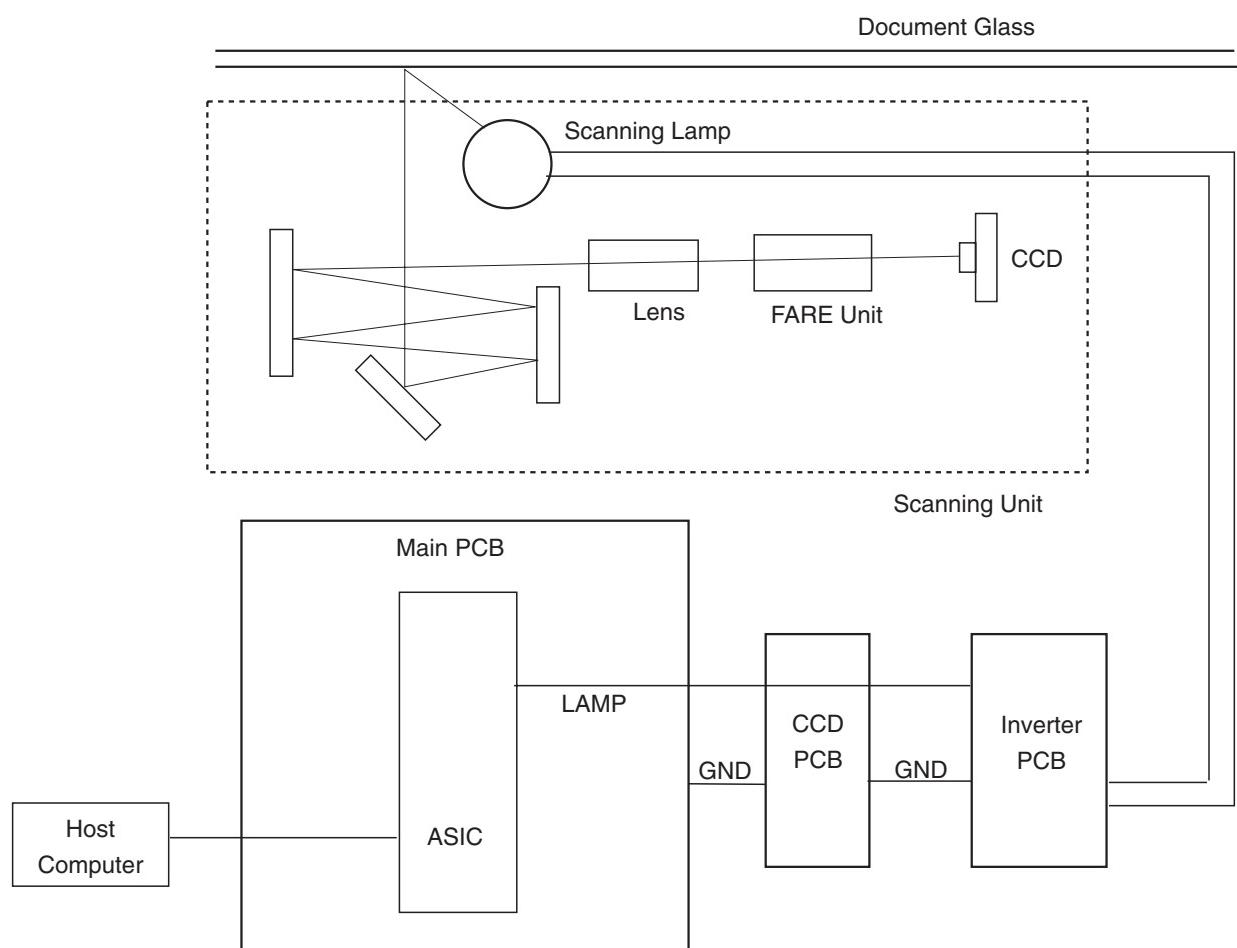


Figure 2-6

2. FAU Lamp Lighting Circuit

When the host computer sends a film scan command, ASIC turns the scanning lamp lighting signal (LAMP) OFF then turns FAU lamp lighting signal (XPA) ON to light the FAU lamp.

The FAU lamp light is converted into a flat light source by a light guide plate, then diffused via 1st diffusive film, brightness enhancement film and 2nd diffusive film. As a result, exposed light from a transparent plate has equal light intensity which transmits a film and focuses on the CCD in the scanning unit.

The FAU lamp also has a lamp OFF function for energy saving as in the case of the scanning lamp.

3. Infrared LED Lighting Circuit

When the host computer sends a command to light an infrared LED, ASIC turns IRLED signal ON to light the infrared LED.

The infrared LED light is converted into a flat light source by a light guide plate as in the case of the FAU lamp, which transmits a film via 1st diffusive film, brightness enhancement film, 2nd diffusive film and transparent plate.

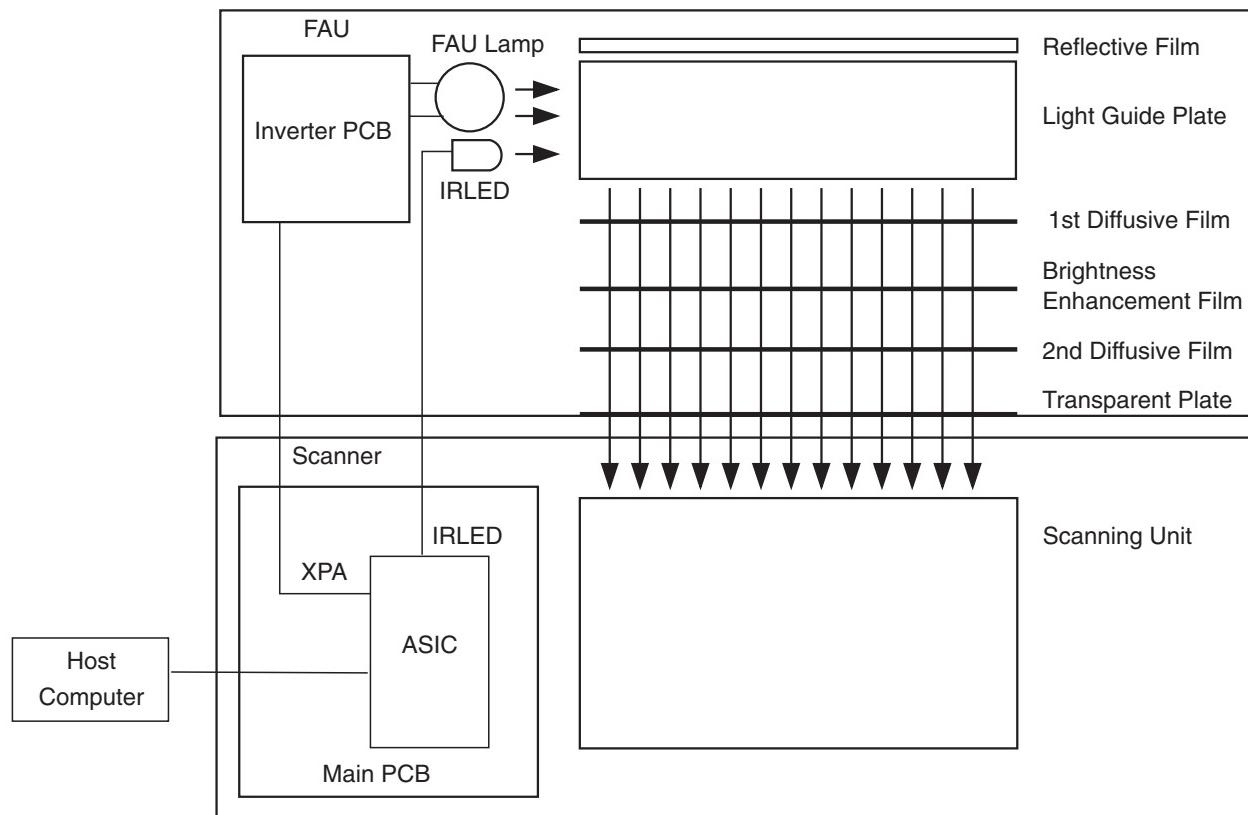


Figure 2-7

C. FARE (Film Automatic Retouching and Enhancement)

1. Outline

CanoScan 8000F employs an infrared LED in addition to the FAU lamp (cold cathode fluorescent lamp) in order to remove scratches and dirt on a film by transmitting a film by two light sources. This function is called FARE (Film Automatic Retouching and Enhancement).

The infrared LED scans only scratches and dirt on a film as image data. This image data is compared to the full image data scanned by the FAU lamp, and the overlapping data of scratches and dirt is subtracted, then this area is compensated for by sampling the ambient data. Accordingly, the image without scratches and dirt is reproduced.

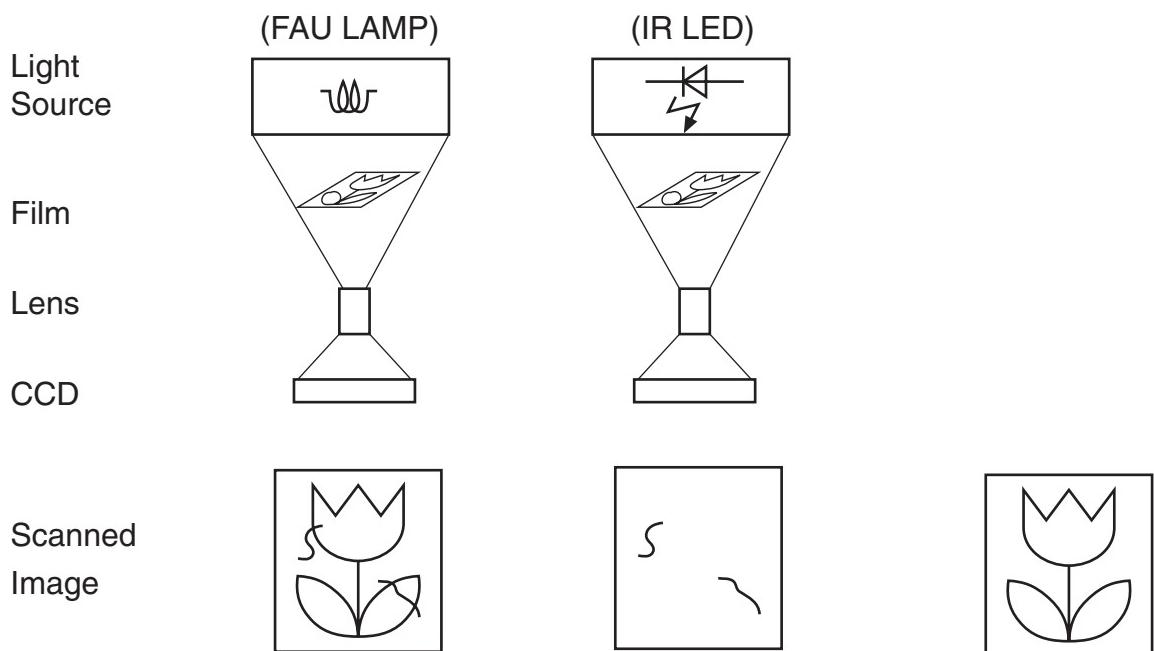


Figure 2-8

2. Operation of FARE Function

The frequency of the FAU lamp (cold cathode fluorescent lamp) is 380-700nm, while that of the infrared LED is 880nm, therefore, their light refractive indexes differ resulting in out of focus (Figure 2-9-2).

As a solution, CanoScan 8000F employs FARE unit between the CCD and lens, which consists of a refraction glass for changing the light refractive index and of an electromagnetic switch for changing the position of the refraction glass.

Firstly, the FAU lamp scans a film passing through the refraction glass. Secondly, the infrared LED scans a film, at the same time, the electromagnetic switch is turned ON to move the refraction glass to the position where the infrared LED light does not pass through (Figure 2-9-3).

Finally, the FAU lamp and infrared LED can scan a properly focused film.

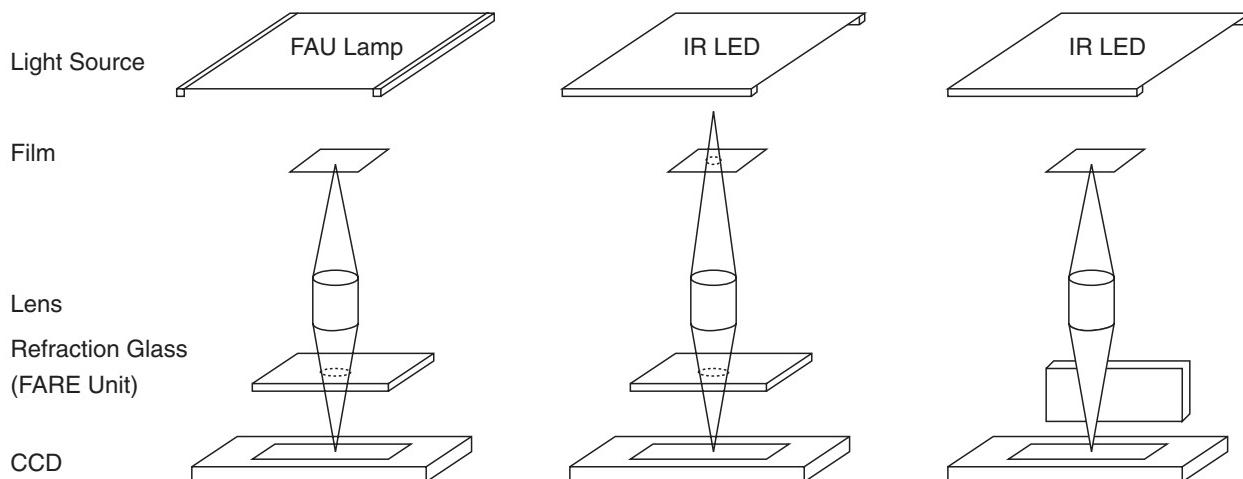


Figure 2-9-1

Figure 2-9-2

Figure 2-9-3

D. Motor Control Circuit

Control program analyzes a command sent from the host computer, and sends a motor clock generation command to ASIC. Gate array generates four-phase motor drive pulse signals [I01, I11, I02, I12], which are sent to the drive motor via motor driver.

When the host computer sends a command to change resolution, the control program commands the ASIC to change the frequency of the motor drive pulse signal to change the drive motor rotating speed.

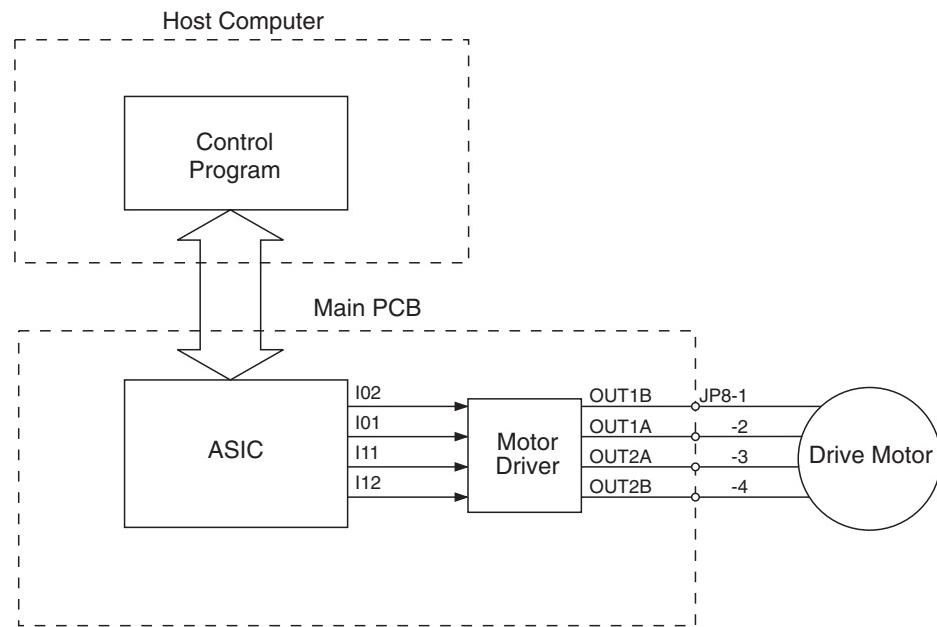


Figure 2-10

III. IMAGE PROCESSING

A. Outline

Image processing system consists of the CCD, analog IC, and ASIC. Analog signal read by the CCD is converted into digital data, then output to the host computer.

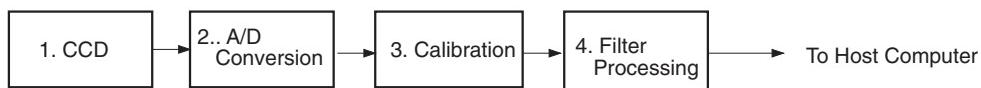


Figure 2-11

B. Image Processing

1. CCD

The CCD is a single chip photoelectric conversion device which consists of several thousand photosensitive devices of each several microns square, for reading RGB image signals, with a built-in scanning circuit.

CanoScan 8000F employs 6-line CCD.

1) 6-line CCD

6-line CCD has two rows of staggered photosensitive devices for RGB each. The 6-line CCD therefore can scan at 1200dpi x 2 = 2400dpi.

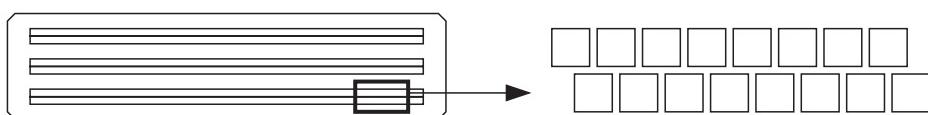


Figure 2-12

2. A/D Conversion

Output signal from the CCD is an analog signal which cannot be used as image data. So RGB output signal from the CCD is amplified by analog amplifier to generate analog data. The generated data is converted into averaged analog signal by D/A converter, then got feedback to the A/D converter to output constant digital data to the ASIC.

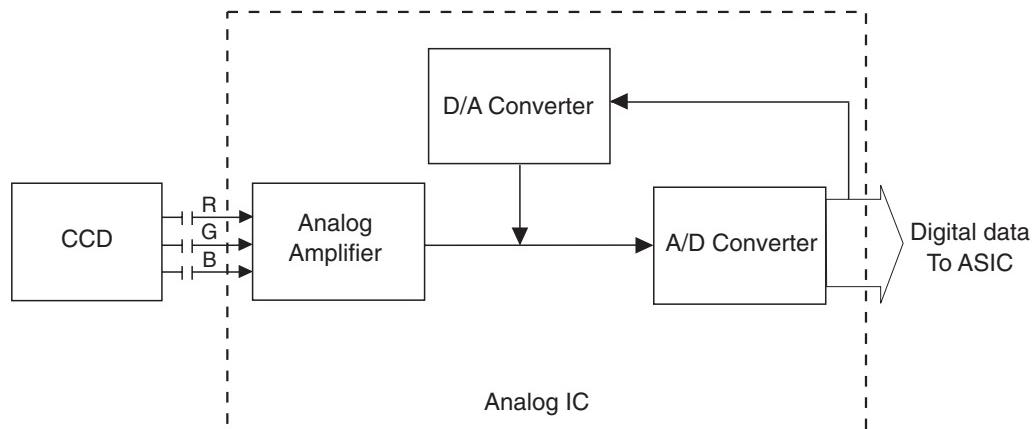


Figure 2-13

1) D/A Converter

D/A converter removes ununiform analog data generated by the CCD. It adjusts CCD output to keep max. 5V of input signal to the A/D converter, to make the black level of the image constant.

2) A/D Converter

The A/D converter converts the black-level-corrected image signal (analog signal) to a 16-bit image data (digital signal) in the order of red, green and blue image signal.

5V is applied to the Vcc terminal and reference voltage is applied to the Vref terminal. A/D converter outputs "0" when input signal is 5V, and outputs "255" when input signal is reference voltage. This converts 1 pixel signal into the image data of 65536 gradations for red, green and blue each.

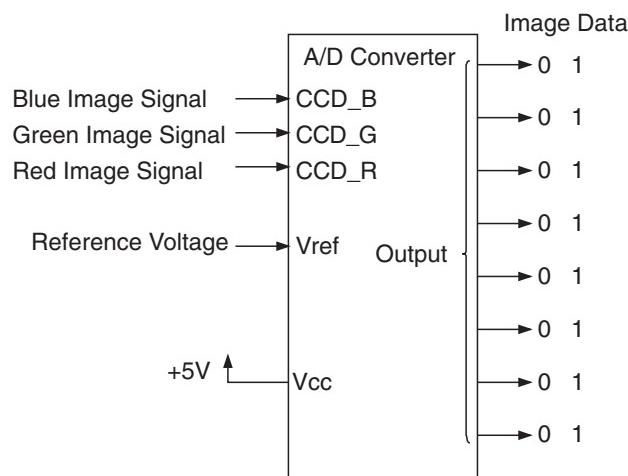


Figure 2-14

3. Calibration

When CCD reads a document of even density, the image signal corresponding to each pixel is not uniform for the following reasons.

- * Light intensity of the scanning lamp is not uniform.
- * There is variation in the sensitivity of the light phototransistors.
- * There is a slight output from the light phototransistors even when no data is input.

These variations are corrected by the calibration in three steps of Offset calibration, Coarse-gain calibration, and Programmable Gain Amplifier (PGA).

1) Offset Calibration

Takes output data when no data is input and normalizes the output data from each pixel at or near 0.

2) Coarse-Gain Calibration

Finds the optimum gain setting for placing the output voltage from all pixels in the adjustment range of Programmable Gain Amplifier.

3) Programmable Gain Amplifier (PGA)

Calculates a gain coefficient for uniforming the output by correcting the output difference among pixels.

4. Filter Processing

When converting resolution and scaling, the image quality tends to be reduced. To prevent the image quality reduction, filter processing is performed according to the resolution. Filter processing includes interpolation processing and averaging.

1) Interpolation Processing

When reading images at higher resolution, the one pixel output of the CCD is treated as two image data in the horizontal scanning direction, and the one line output of the CCD is treated as two image data in the vertical scanning direction, causing a reduced image quality. To prevent the image quality reduction, interpolation processing is performed. Figure 2-15 shows a change in image density by the interpolation processing.

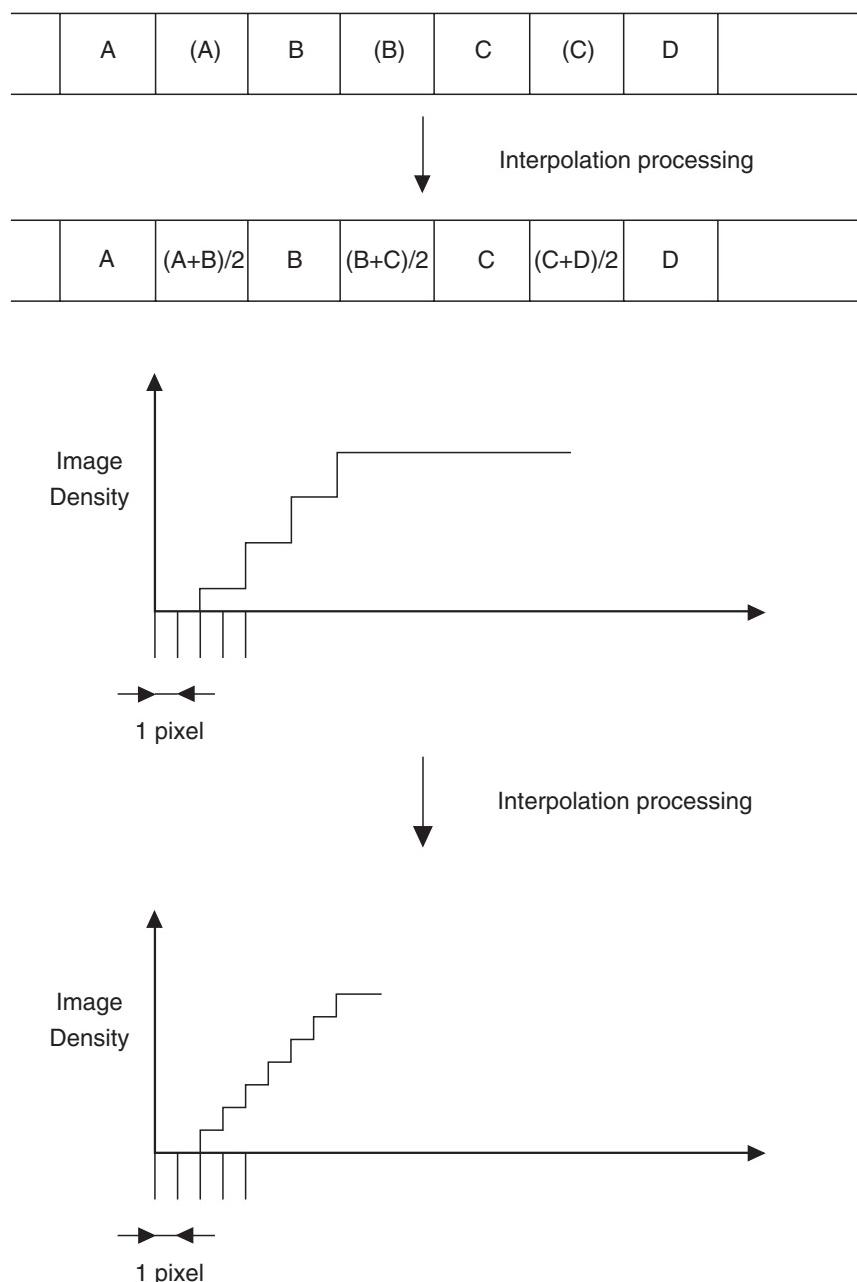


Figure 2-15

2) Averaging

When reading images at lower resolution, the thinned data increases resulting in output image deterioration. Averaging is a process in which the data to be thinned and the data to be actually output are averaged and output, in order to suppress the image deterioration due to the data thinning.

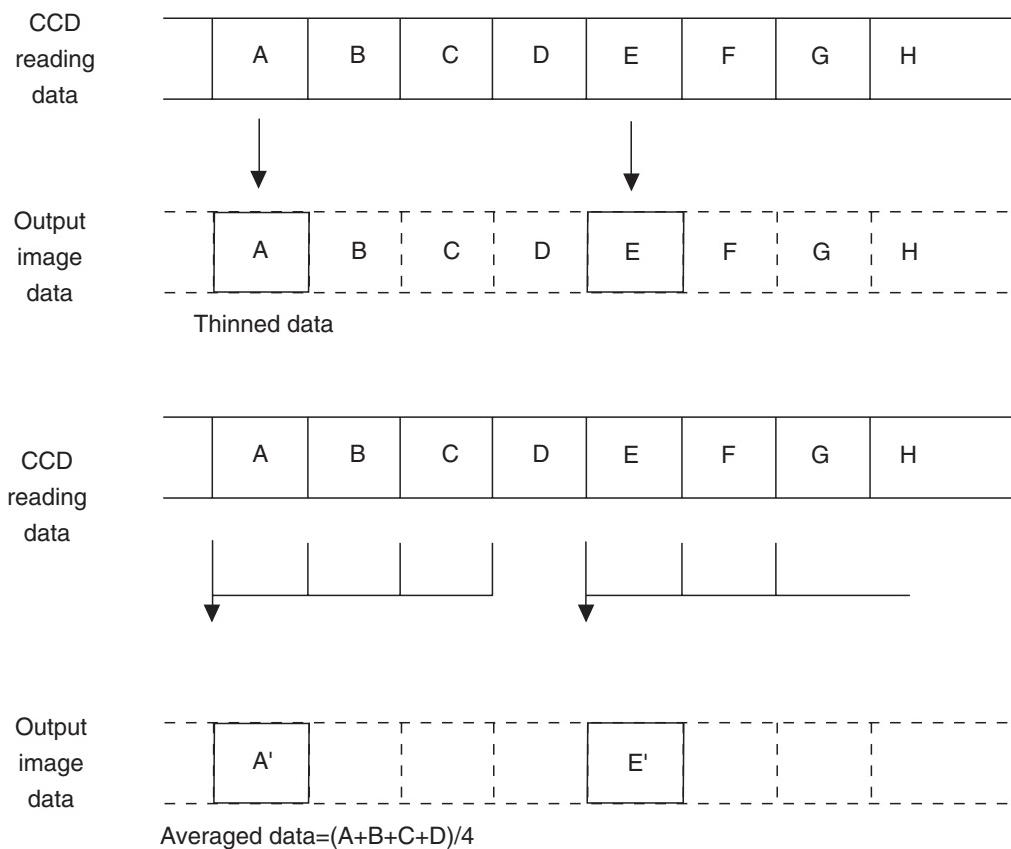


Figure 2-16

IV. CONTROL SYSTEM

A. Control System Diagram

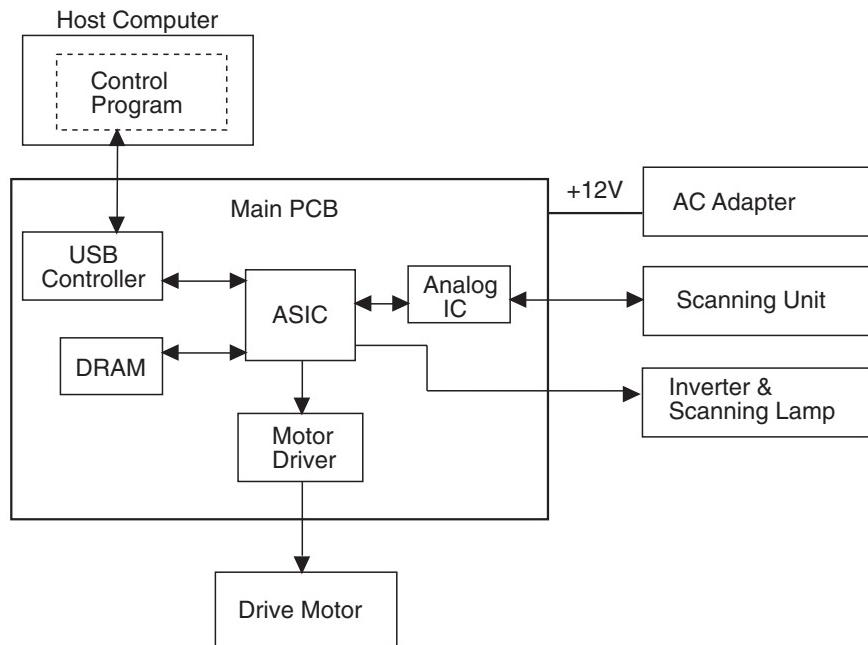


Figure 2-17

B. Main PCB

The scanner is not equipped with CPU. The device driver installed in the host computer includes a control program, which functions as CPU. Control program sends a command to the ASIC in the main PCB, the ASIC controls the whole electrical circuits and image processing of the scanner.

Main PCB consists of ASIC, DRAM, USB controller, analog I/C and motor driver.

V. INTERFACE**A. Outline of USB Standard**

CanoScan 8000F employs USB2.0.

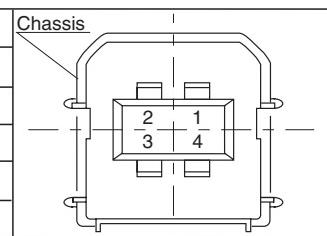
Features of USB include;

1. USB is an interface to connect peripheral devices to a host computer.
2. Tree-structure can connect up to 127 devices on a host computer by using "hub".
3. USB has three data transfer modes of "full speed mode" at 12Mbps, "low speed mode" at 1.5Mbps, and "high speed mode" at 480Mbps (new standard of USB 2.0.)
CanoScan 8000F supports USB2.0's "high speed mode".
4. Hot plug (connectable/disconnectable with the power ON) is available.
5. Power source is supplied via USB.

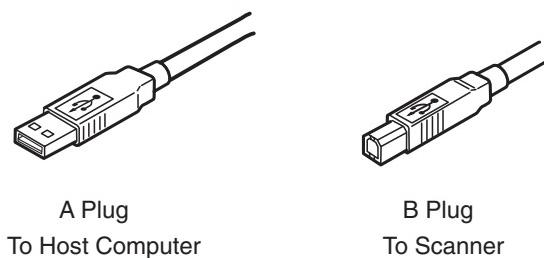
B. Signal Definitions

USB uses two differential signal lines (D+ and D-) only to communicate with the host computer.

Pin	Signal
1	VBUS
2	D-
3	D+
4	Signal GND
Shell	Chassis GND

**Table 2-2****C. Interface Connection**

USB connector has A plug for connecting to upper layer and B plug for connecting to lower layer.

**Figure 2-18**

VI. POWER SUPPLY

DC power is supplied from the supplied AC adapter. Through power regulator, four DC power sources (+3.3V, +5V, +12V and +16.8V) are used in the circuit. +3.3V and +5V are supplied for the digital circuit and linear chip, +5V is for the Analog IC and home position sensor, +16.8V is for the CCD PCB, and +12V is for the motor driver and scanning lamp.

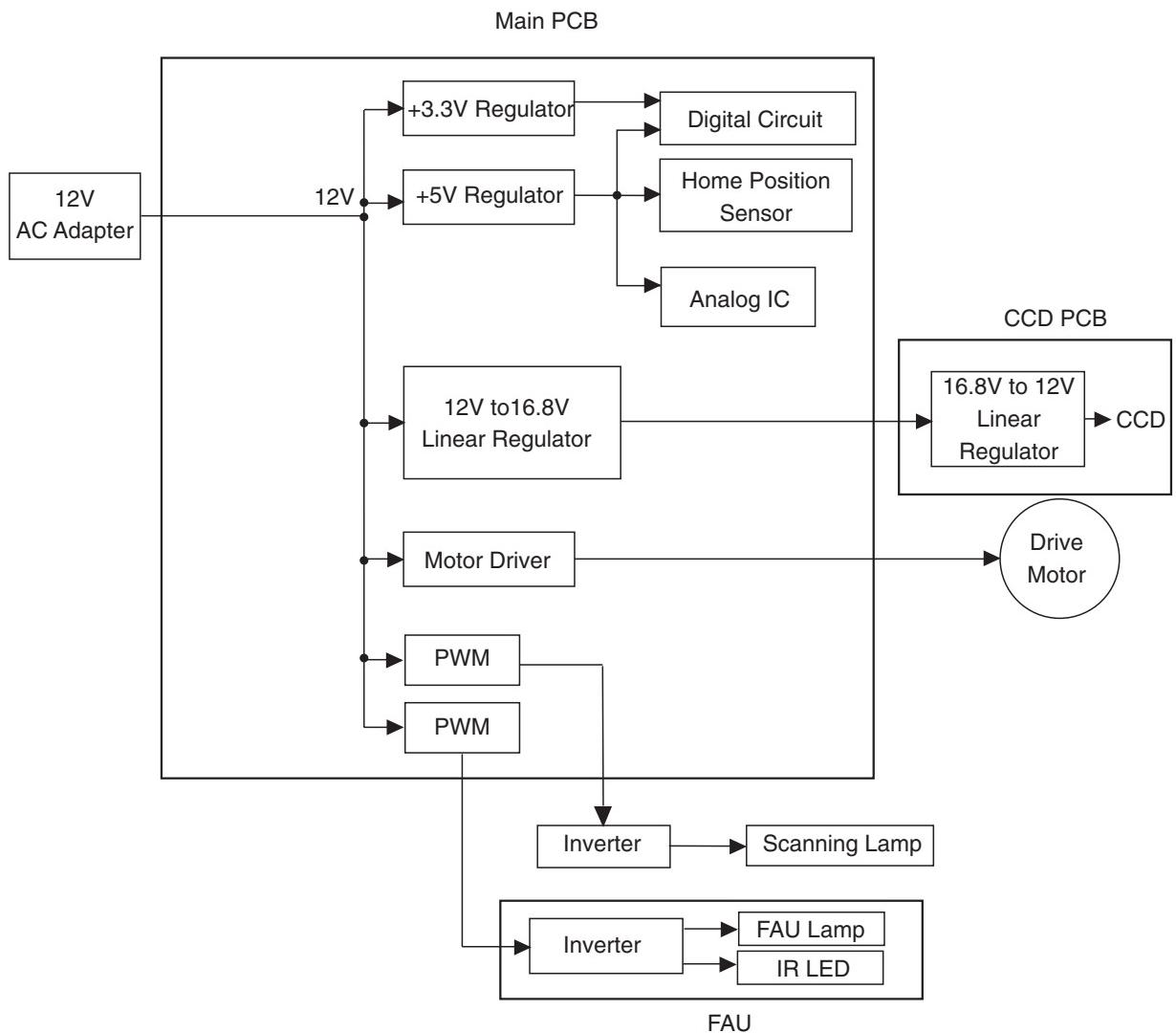


Figure 2-19

CHAPTER 3

MECHANICAL SYSTEM

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A. Precautions	3-1	B. Removing the Button PCB ...	3-9
II. EXTERNALS	3-2	IV. OPTICAL SYSTEM	3-10
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B. Removing the Top Cover and		B. Cautions When Attaching the	
Document Glass Unit	3-3	Motor Unit	3-16
C. Removing the Front Panel ...	3-6	C. Cautions When Attaching the	
III. PCBs	3-8	Pulley Unit	3-18

I. PARTS REPLACEMENT

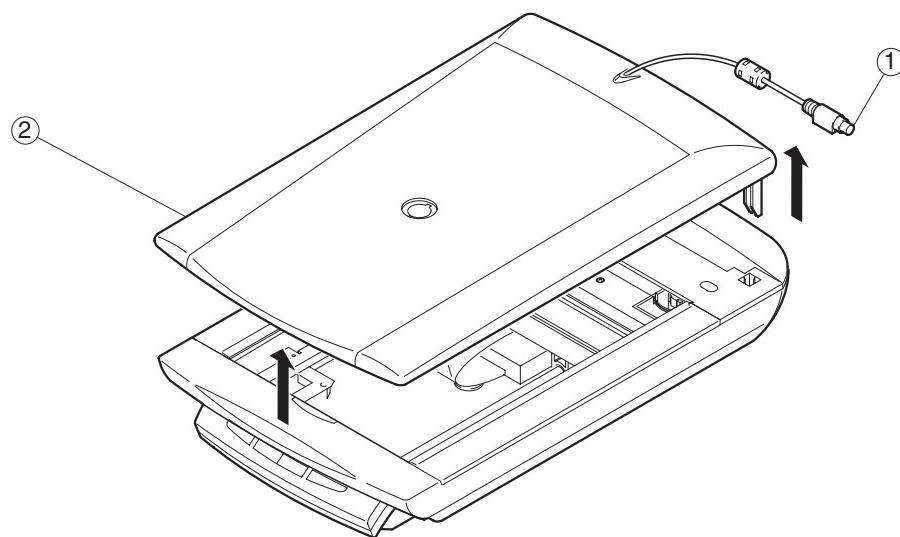
A. Precautions

- * Disconnect the AC adapter, USB cable, and FAU cable from the scanner before replacing the parts.
- * Wear anti-static gloves and grounding strap around the wrist during the work.
- * Follow the instructed steps. Do not remove any screw from the parts that is not to be replaced.
- * Store the removed parts in a clean place and avoid missing.
- * Attach the parts in reverse order of the removing steps, unless otherwise specified.
- * After replacement, check the quantity and shape of the replaced parts.

II. EXTERNALS

A. Removing the Film Adapter Unit

- 1) Disconnect the FAU cable.
- 2) Lift the film adapter unit as shown in Figure 3-1 to remove it.

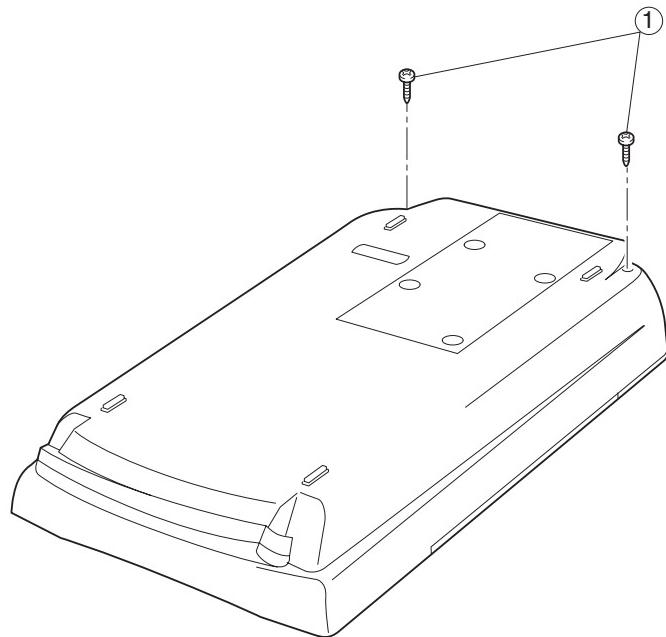


- (1) FAU Cable
(2) Film Adapter Unit

Figure 3-1

B. Removing the Top Cover and Document Glass Unit

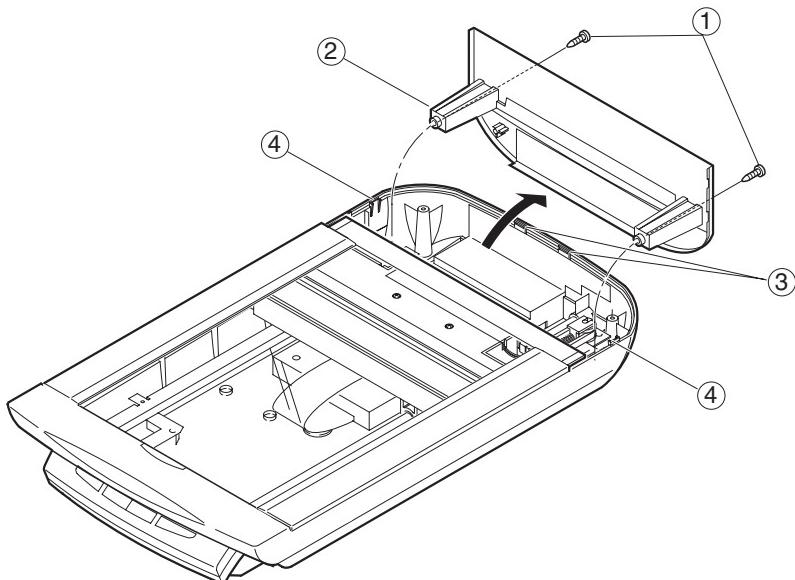
- 1) Turn the scanner over and remove two screws.



① Screw

Figure 3-2

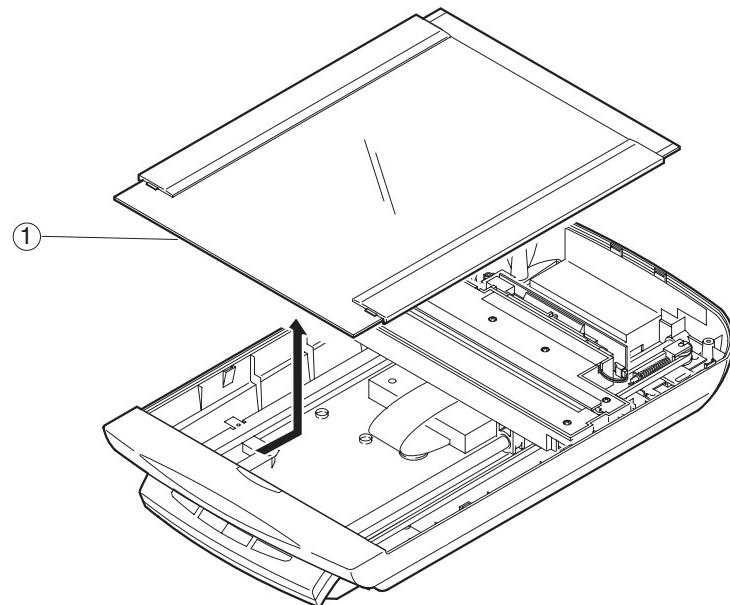
- 2) Return the scanner to the normal position and remove two screws from the top cover.
- 3) Press and remove two hooks on both sides of the main frame back side.
- 4) Rotate the top cover backward and remove the hook on the back to remove the top cover.



- ① Screw
- ② Top Cover
- ③ Hook (on the back)
- ④ Hooks (on both sides)

Figure 3-3

- 5) Slide the document glass unit backward and lift to remove it.

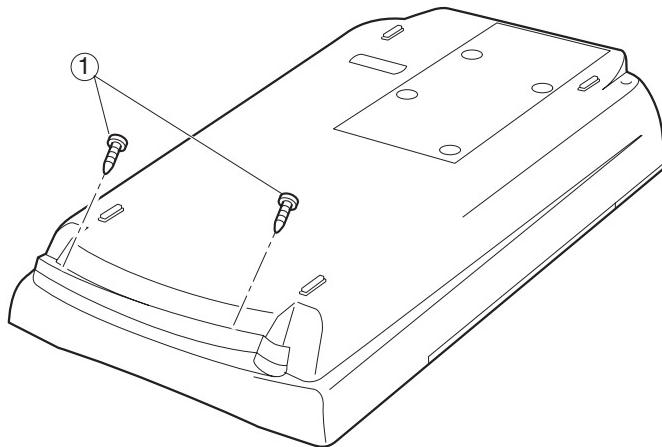


① Document Glass Unit

Figure 3-4

C. Removing the Front Panel

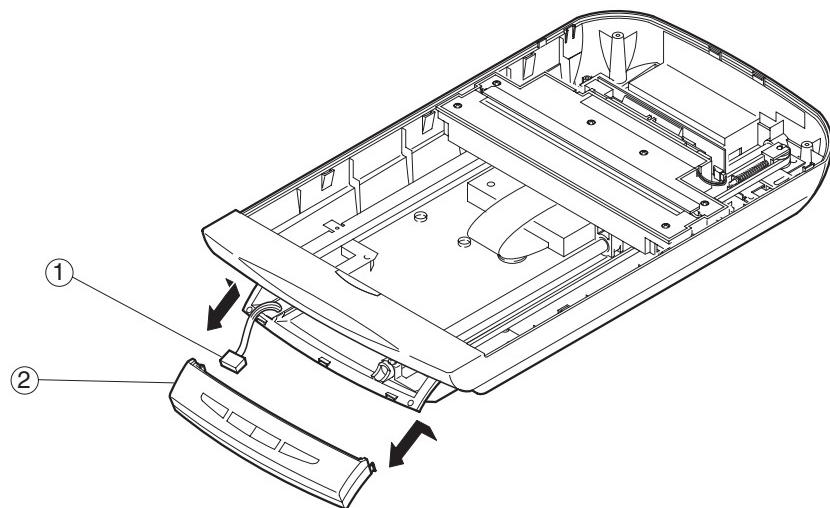
- 1) Turn the scanner over and remove two screws from the rear of the front panel.



① Screw

Figure 3-5

- 2) Remove the film adapter unit, top cover, and document glass unit.
- 3) Press two hooks on both sides of the front panel inward to remove the front panel.



- (1) Button Cable
- (2) Front Panel

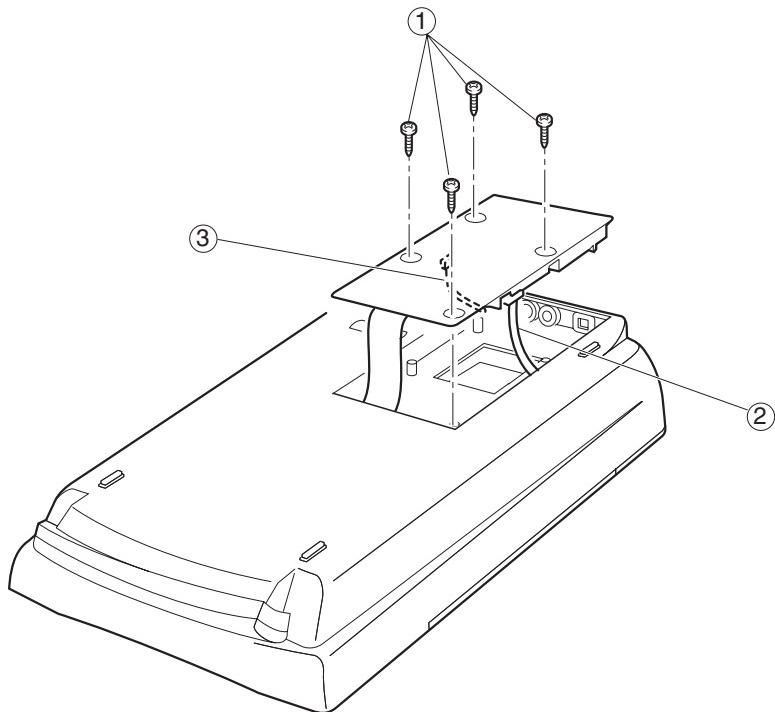
Figure 3-6

- 4) Disconnect the button cable.

III. PCBs

A. Removing the Main PCB

- 1) Turn the scanner over and remove four screws to lift the main PCB.

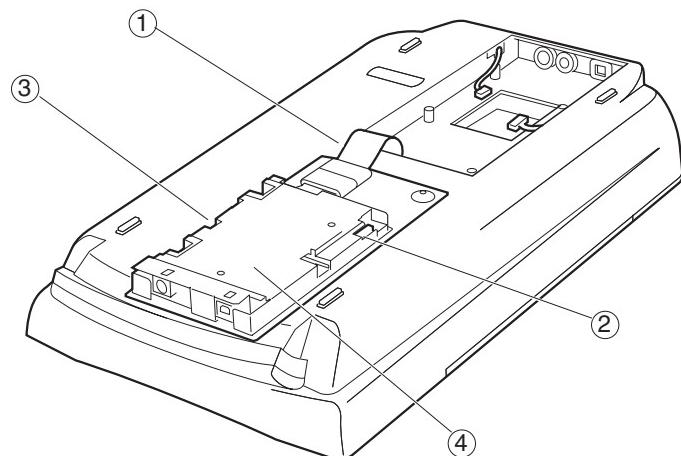


- ① Screw
- ② Button Cable
- ③ Motor Unit Cable

Figure 3-7

Note: Do not lift the main PCB too much because the motor unit cable and button cable are connected.

- 2) Disconnect the motor unit cable and button cable from the main PCB, and turn the main PCB over as shown in Figure 3-8.



- ① Flat Cable
- ② Button Cable Connector
- ③ Motor Unit Cable Connector
- ④ Main PCB

Figure 3-8

- 3) Disconnect the flat cable from the main PCB.

B. Removing the Button PCB

- 1) Remove the film adapter unit, top cover, document glasss unit, and front panel.
- 2) Remove five screws from the button PCB to remove it.

IV. OPTICAL SYSTEM

A. Removing the Scanning Unit, Pulley Unit, and Motor Unit

Note: Lens and mirrors of the scanning unit are factory adjusted.

Do not touch the lamp, mirrors, and CCD PCB (shaded area) of the scanning unit.

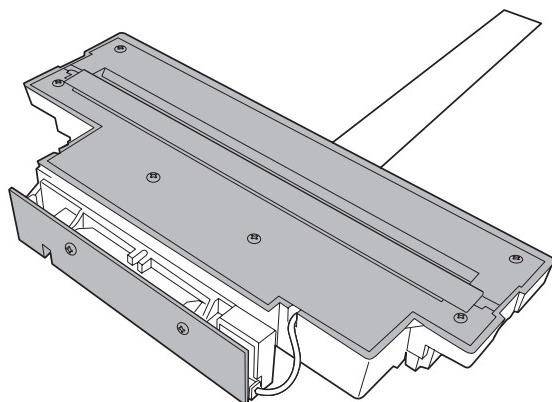
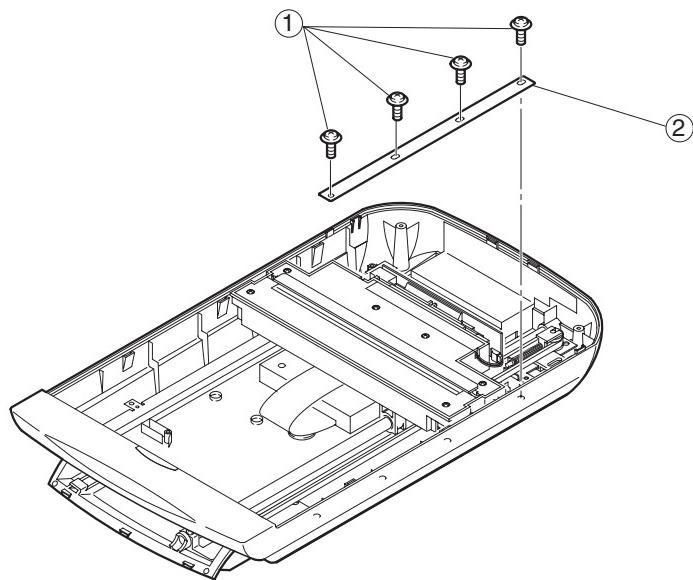


Figure 3-9

- 1) Turn the scanner over and remove the main PCB.
- 2) Remove the film adapter unit, top cover, document glass unit, and front panel.
- 3) Rotate the gear mounted on the motor unit to move the scanning unit away from the home position.
- 4) Remove four screws from the motor cable cover to remove it.



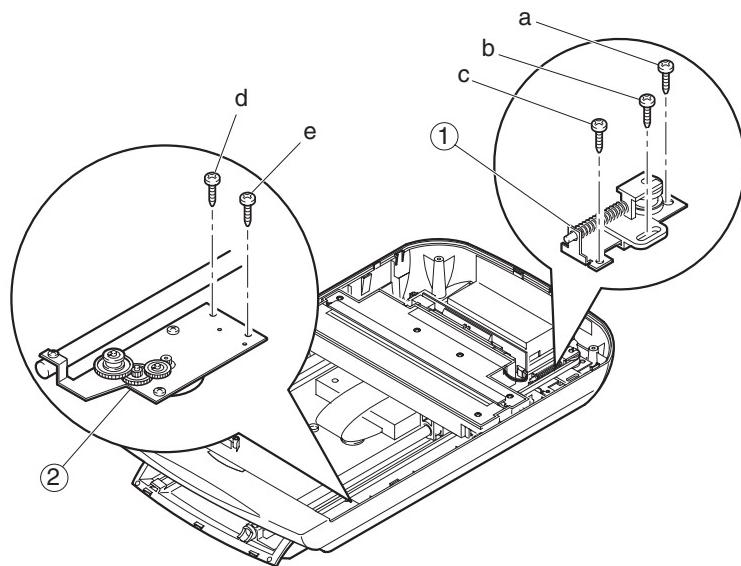
- ① Screw
② Motor Cable Cover

Figure 3-10

5) Remove three screws from the pulley unit in order of a-b-c in Figure 3-11 to remove it.

Note: Be careful not to lose the pulley as it can easily be removed.

6) Remove two screws from the motor unit in order of d-e in Figure 3-11 to remove it.



- ① Pulley Unit
- ② Motor Unit

Figure 3-11

- 7) Push the sliding rod backward and displace the front part to the side.

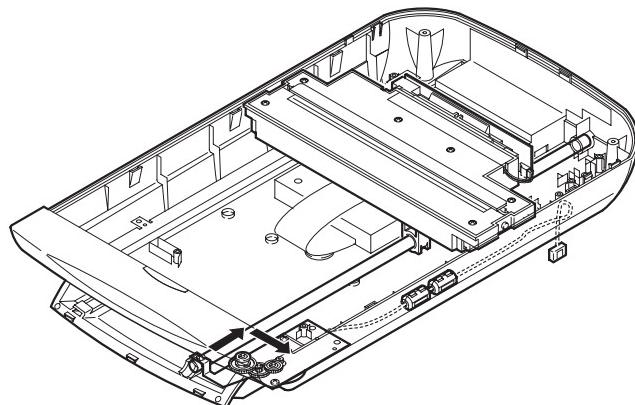
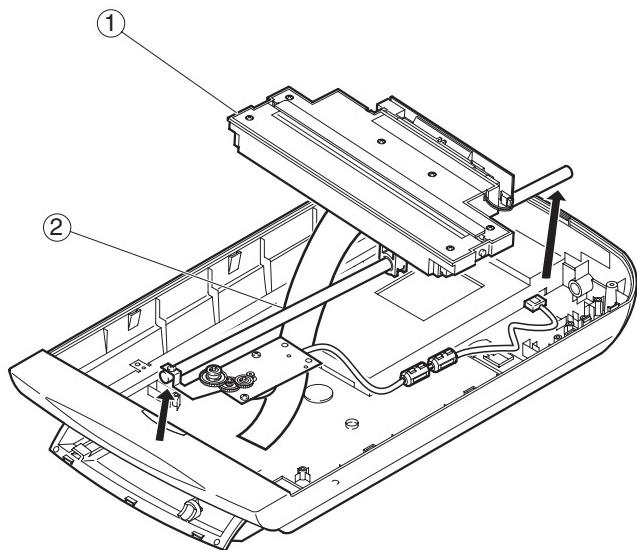


Figure 3-12

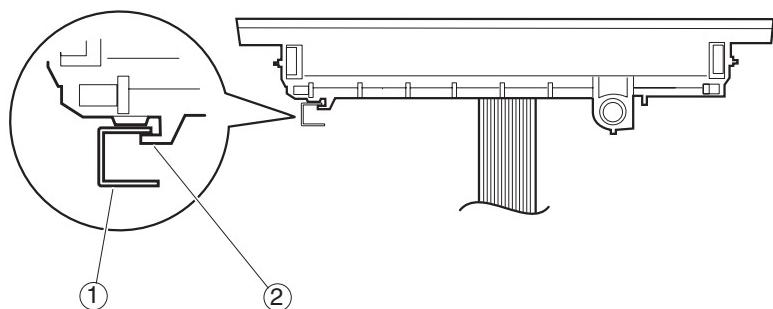
- 8) Slide the sliding rod forward, then lift with the scanning unit to remove it.



- (1) Scanning Unit
(2) Sliding Rod

Figure 3-13

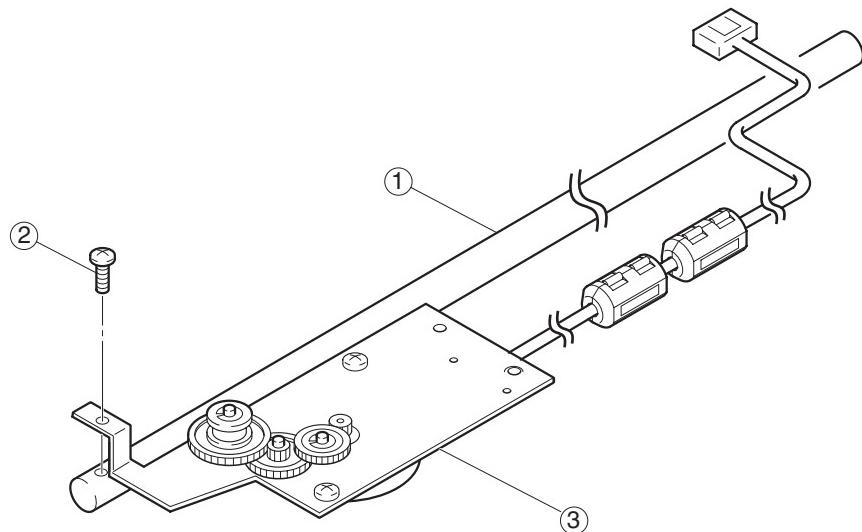
Note: When lifting the scanning unit, displace the hook under the rail.



- (1) Rail
(2) Hook

Figure 3-14

- 9) Remove the sliding rod and drive belt from the scanning unit.
- 10) Remove a screw and separate the sliding rod from the motor unit.



- ① Sliding Rod
- ② Screw
- ③ Motor Unit

Figure 3-15

B. Cautions When Attaching the Motor Unit

- 1) Apply grease (EM-50L) to the shaft of the gear when attaching the motor unit.

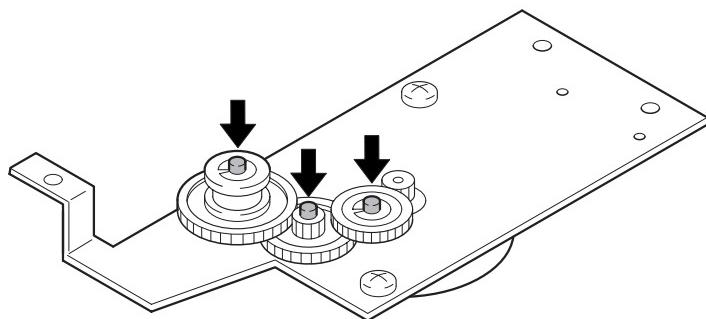


Figure 3-16

- 2) Ground the motor unit cable as shown in Figure 3-17.

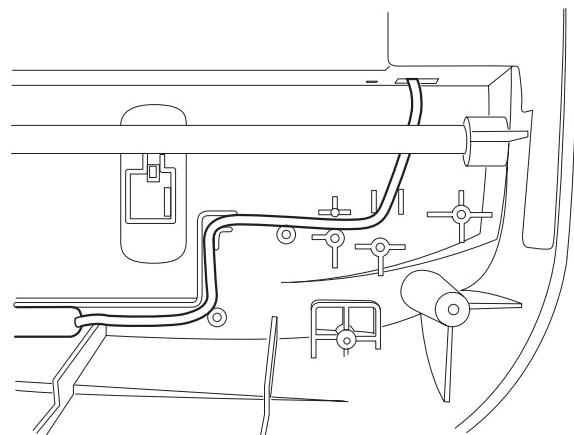
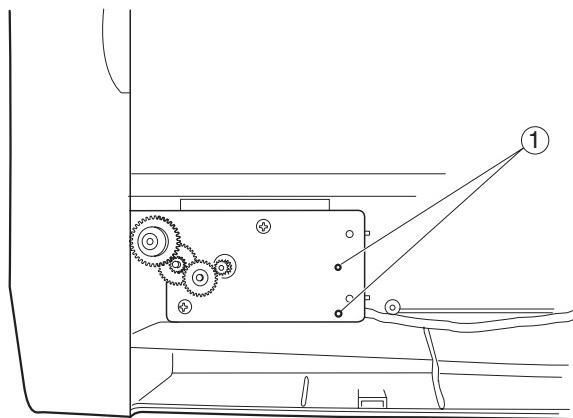


Figure 3-17

- 3) When fixing the motor unit to the bottom cover with two screws, make sure the motor unit is positioned by two embosses on the bottom cover.



① Emboss

Figure 3-18

C. Cautions When Attaching the Pulley Unit

- 1) Apply grease (EM-50L) to the shaft of the idle pulley when attaching the pulley unit.

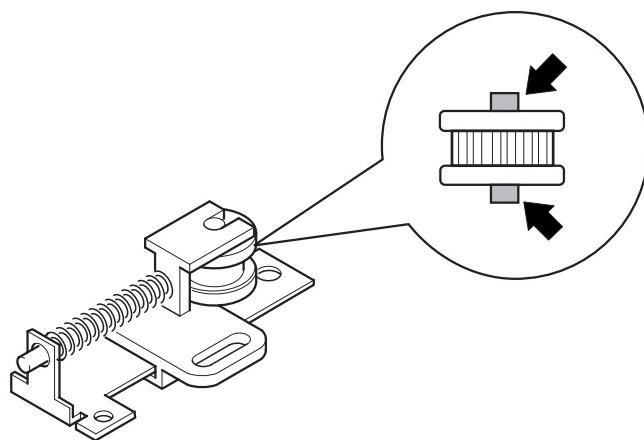


Figure 3-19

CHAPTER 4

MAINTENANCE AND SERVICING

I. PERIODICAL REPLACEMENT	III. PERIODICAL SERVICING	4-1
PARTS	IV. SPECIAL TOOLS	4-1
II. CONSUMABLE PARTS	V. SOLVENTS AND LUBRICANTS	4-1
DURABILITY		

I. PERIODICAL REPLACEMENT PARTS

None

II. CONSUMABLE PARTS DURABILITY

None

III. PERIODICAL SERVICING

None

IV. SPECIAL TOOLS

None

V. SOLVENTS AND LUBRICANTS

Grease used for disassembly and reassembly of the scanner.

Name : MOLYKOTE EM-50L

Tool No. : HY9-0007

Usage : To be applied to the shaft of the gear of the motor unit and pulley unit.

CHAPTER 5

TROUBLESHOOTING

I.	INTRODUCTION	5-1	C.	Scanning Unit Movement Failure	5-5
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B.	Others	5-1	E.	Acoustic Noise	5-5
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A.	Power LED Failure	5-2	A.	Outline	5-6
B.	Communication Failure	5-3	B.	Operating Environment	5-6
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A.	Power LED Not Lighting	5-4	D.	Functions Descriptions	5-8
B.	Communication Failure	5-4	E.	Error Message	5-16

I. INTRODUCTION

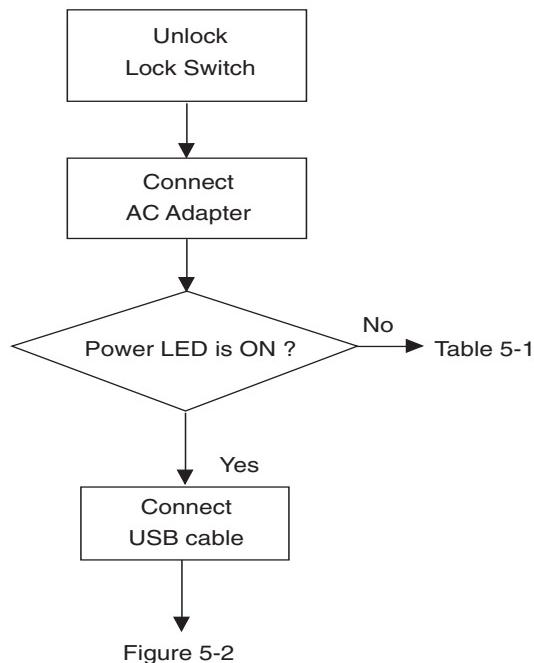
A. Initial Check

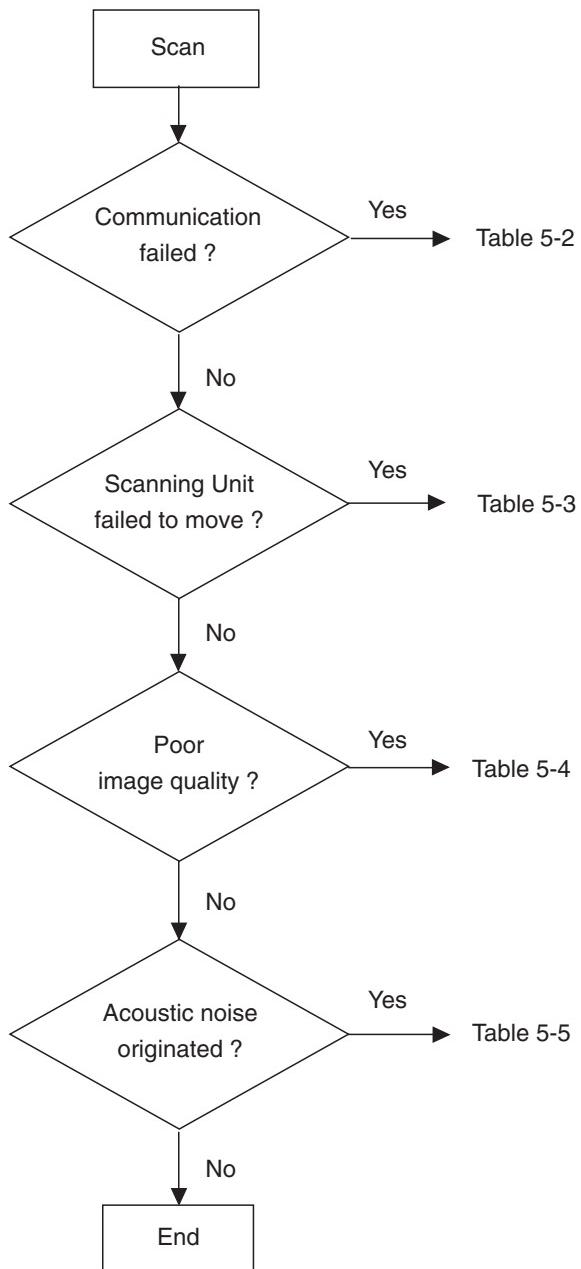
Check if the operating environment conforms to the following conditions.

- * Line voltage is within $\pm 10\%$ of the rated value.
- * Ambient temperature and humidity conform to the operating environment. (Refer to CHAPTER 1, I. SPECIFICATIONS)
- * The scanner is not setup near a water faucet, boiler, humidifier, open flame, or in dusty place.
- * The scanner is not exposed to direct sunlight. If it is inevitable to setup in a sunny place, hang a curtain to block direct sunlight.
- * The scanner is setup in a well-ventilated place.

B. Others

Moving a scanner from a cold place to a warm place can cause condensation on the metal parts, resulting in a faulty operation.

II. TROUBLESHOOTING FLOWCHART**A. Power LED Failure****Figure 5-1**

B. Communication Failure**Figure 5-2**

III. PROBLEM, CAUSE AND CORRECTIVE ACTION

CanoScan 8000F may have the following five problems.

- * Power LED not lighting
- * Communication failure
- * Scanning unit movement failure
- * Poor image quality
- * Acoustic noise

A. Power LED Not Lighting

Possible Cause	Related Parts	Check Method	Corrective Action
AC adapter is unplugged from the outlet	None	Visual check	Plug the AC adapter into the outlet
AC Adapter cable is disconnected from the scanner	None	Visual check	Connect the AC adapter cable to the power connector on the scanner
AC adapter output voltage failure	AC Adapter	Output voltage (+12V) check	Replace the AC adapter
Button PCB failure	Button PCB	Tester check	Replace the button PCB
Main PCB failure	Main PCB	Tester check (+12V, GND)	Replace the main PCB
Main PCB connection failure	None	Visual check	Properly connect the main PCB

Table 5-1**B. Communication Failure**

Possible Cause	Related Parts	Check Method	Corrective Action
USB cable connection failure	USB cable	Visual check	Connect the USB cable properly
Scanner communication failure	Main PCB	Trial replacement	Replace the main PCB
Scanning unit failure	Scanning unit	Trial replacement	Replace the scanning unit

Table 5-2

C. Scanning Unit Movement Failure

Possible Cause	Related Parts	Check Method	Corrective Action
Drive belt broken or worn	Drive belt	Trial replacement	Replace the drive belt
Gears broken or worn	Pulley Unit	Trial replacement	Replace the pulley unit
Scanner button failure	Button PCB	Trial replacement	Replace the button PCB
Drive motor failure	Motor unit	Trial replacement	Replace the motor unit

Table 5-3**D. Poor Image Quality**

Possible Cause	Related Parts	Check Method	Corrective Action
Scanning lamp does not light or blinks	Scanning unit	Visual check	Replace the scanning unit
Dirt on document glass	Document glass	Visual check	Clean the document glass
Main PCB failure	Main PCB	Trial replacement	Replace the main PCB
CCD PCB failure	Scanning unit	Trial replacement	Replace the scanning unit

Table 5-4**E. Acoustic Noise**

Possible Cause	Related Parts	Check Method	Corrective Action
Motor unit failure	Motor unit	Trial replacement	Replace the motor unit
Main PCB failure	Main PCB	Trial replacement	Replace the main PCB
Scanning unit failure	Scanning unit	Trial replacement	Replace the scanning unit
Dirt on sliding rod	None	Visual check	Clean the sliding rod
Reference sheet is improperly positioned	Document glass unit	Trial replacement	Replace the document glass unit

Table 5-5

IV. CANON SCANNER TEST

A. Outline

Canon Scanner Test is a utility software to check if faulty operation of CanoScan 8000F is due to the hardware or the communication with the host computer.

Windows : scantest.exe (English or Japanese is switched according to the language to be used in Windows.)

Macintosh : chk8000e (English)
chk8000j (Japanese)

B. Operating Environment

The following environment is required for operating the Canon Scanner Test.

Windows platform

- * CanoScan 8000F
- * PC/AT Compatibles (Pentium or later)
- * Windows 98/Me/2000/XP OS
- * CanoScan 8000F Device Driver

Macintosh platform

- * CanoScan 8000F
- * Power Macintosh
- * Macintosh OS (Version 9.0 - 9.2)
- * CanoScan 8000F Device Driver

Note: Install CanoScan 8000F device driver before using the Canon Scanner Test.

C. Functions**1. USB Information (Windows only)**

Scanner information connected to the USB port on the PC is displayed.

2. Scanner Information

Control program of CanoScan 8000F connected to the PC is displayed.

3. Scanner Self Test

CanoScan 8000F self test is executed.

4. Scan

An image is scanned at any resolution and saved as an image file in the folder of Canon Scanner Test.

5. Film Scan

35mm sleeve negative film is scanned by FAU lamp and IR LED with FARE function, then saved as two image files in the folder of Canon Scanner Test. The film of 1 frame at upper right in the sleeve film holder is scanned at 1200 dpi fixed.

Note: Calibration function is gray out and unable to click for CanoScan 8000F.

D. Functions Descriptions

1. USB Information (Windows only)

Select "USB Information" from the "Function" menu to display as shown in Figure 5-3 (Windows).

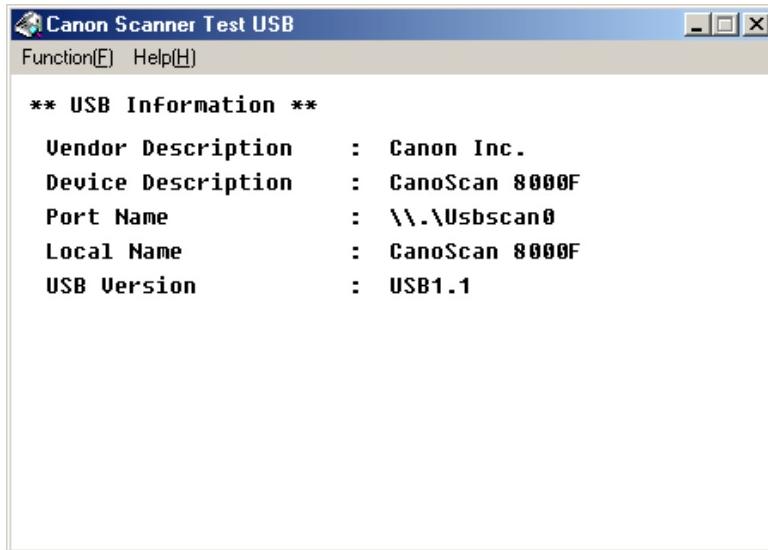


Figure 5-3

- * Vendor Description : Manufacturer name of the scanner "Canon Inc."
- * Device Description : Product name of the scanner "CanoScan 8000F"
- * Port Name : Port name of the scanner recognized by Windows
- * Local Name : Product name of the scanner "CanoScan 8000F"
- * USB Version : USB version (USB1.1/USB2.0) that the scanner is operating with.

2. Scanner Information

Select "Scanner information" from the "Function" menu to display as shown in Figure 5-4 (Windows), Figure 5-5 (Macintosh).

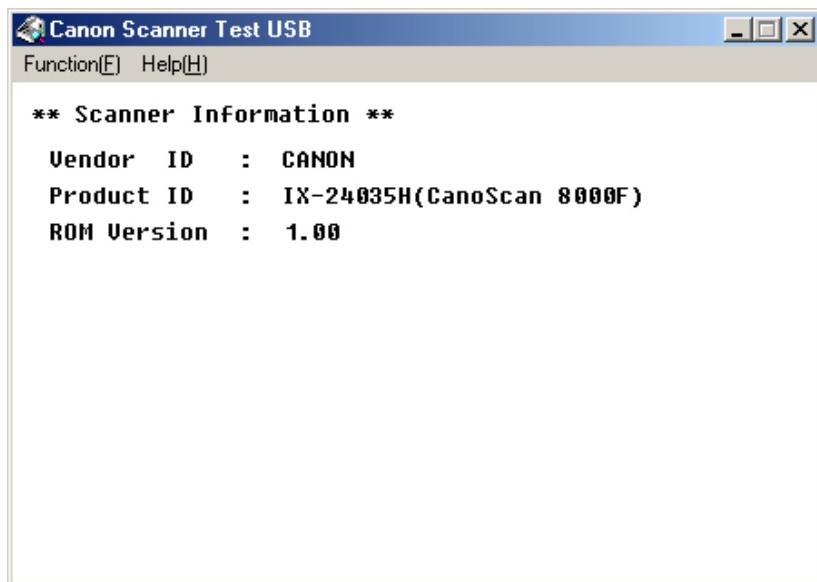


Figure 5-4

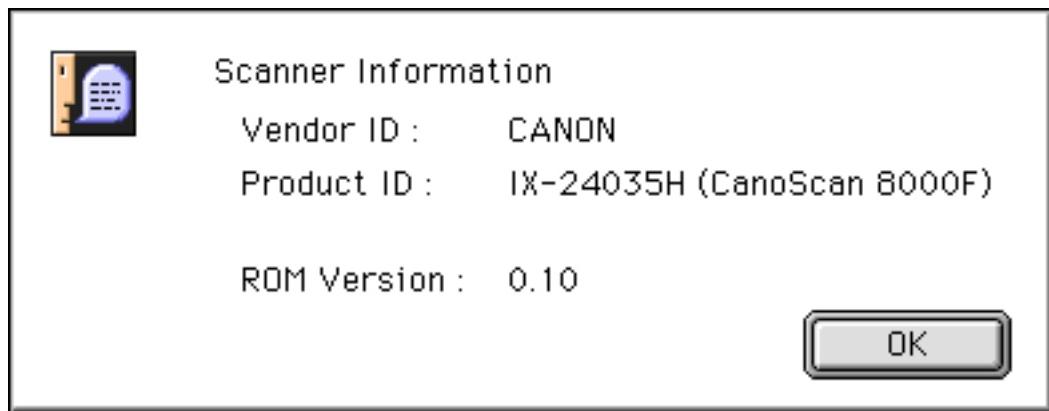


Figure 5-5

- * Vendor ID : Manufacturer name of the scanner "CANON"
- * Product ID : "IX-24035H"(CanoScan 8000F)
- * ROM Version : Firmware version of the control program of the scanner

3. Scanner Self Test

Select “Scanner self test” from the “Function” menu to display as shown in Figure 5-6 (Windows), Figure 5-7 (Macintosh).

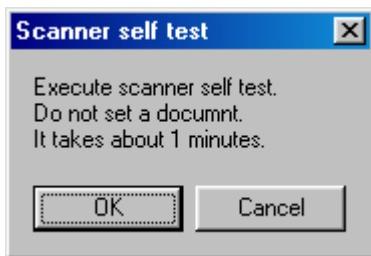


Figure 5-6

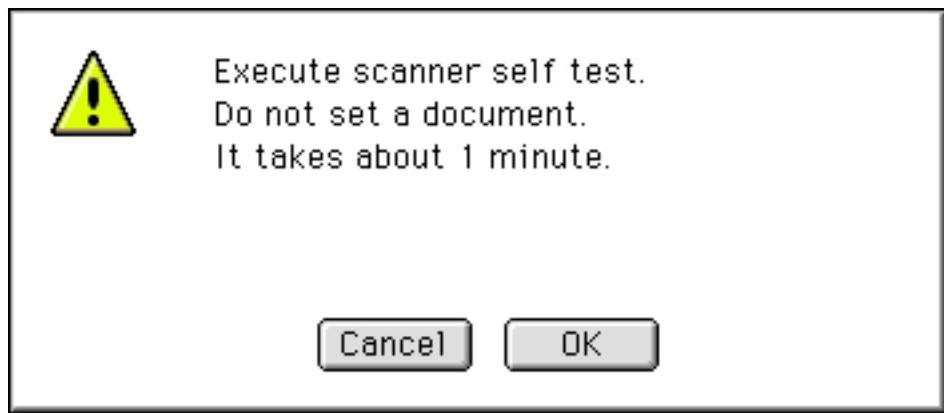


Figure 5-7

Click “OK” to start scanner self test. When it is completed normally, a dialog is displayed as shown in Figure 5-8 (Windows), Figure 5-9 (Macintosh).

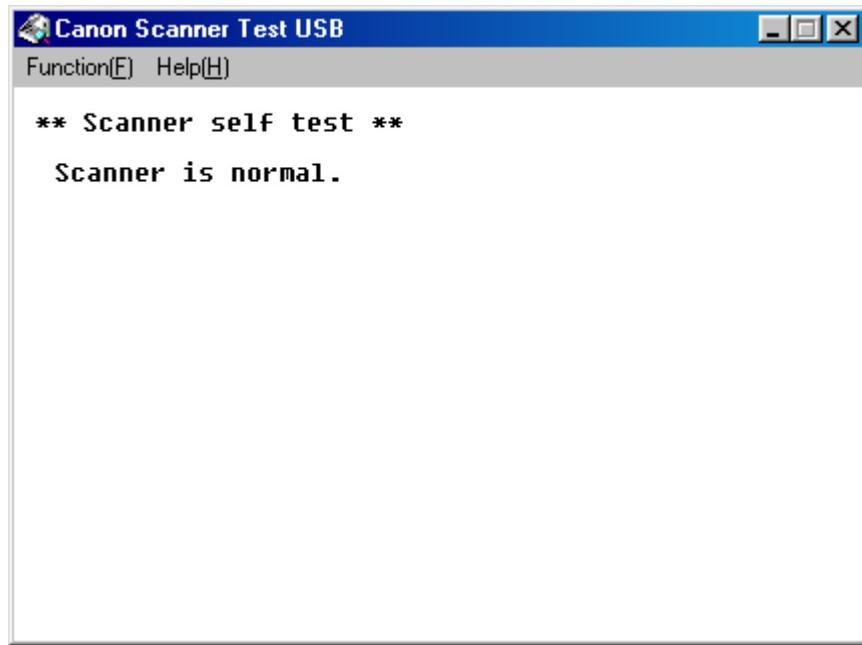


Figure 5-8

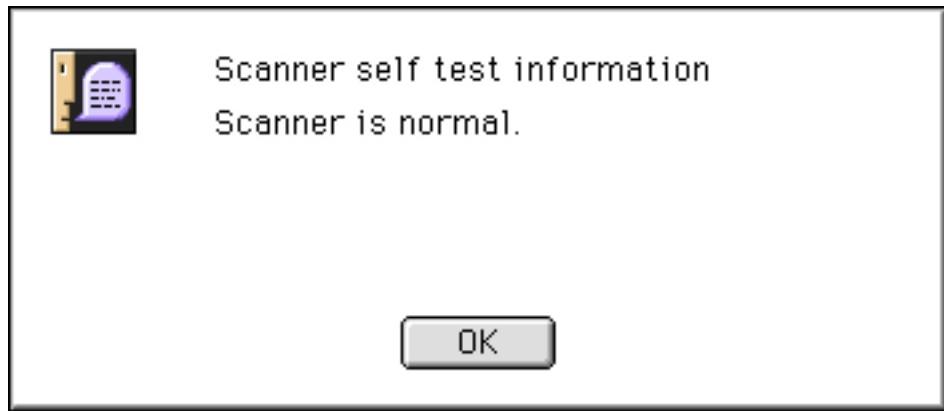


Figure 5-9

When an error occurs, refer to “E. Error Message” to take a corrective action.

4. Scan

Select “Scan” from the “Function” menu to display as shown in Figure 5-10 (Windows), Figure 5-11 (Macintosh).

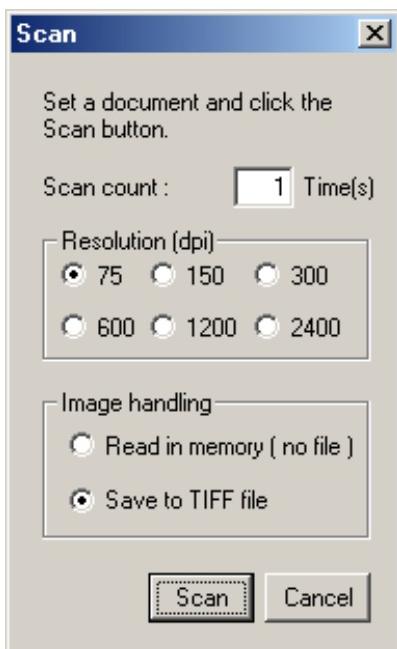


Figure 5-10

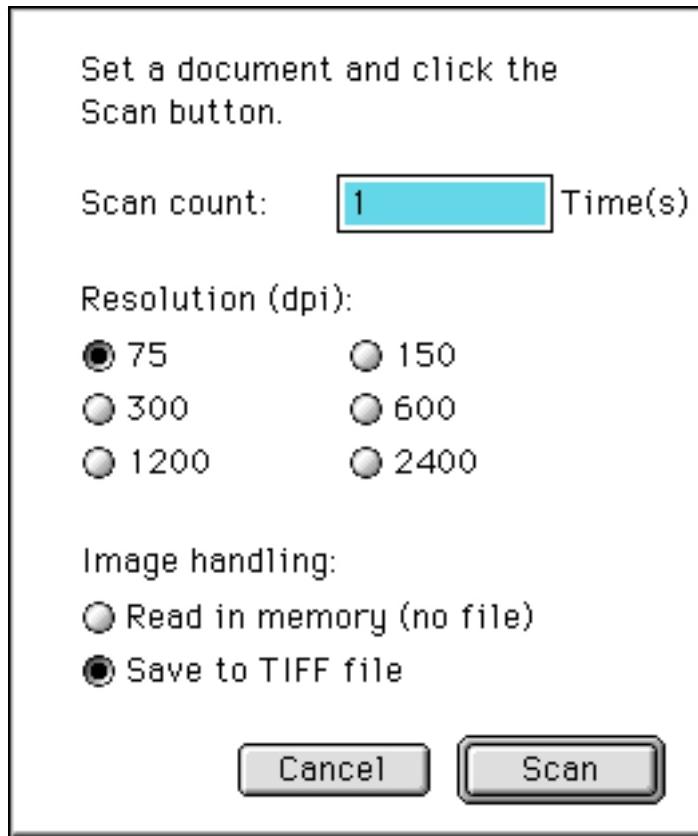


Figure 5-11

* Scan count

Set a number from 1 to 100.

* Resolution (dpi)

When the resolution for scanning an image is selected at 75, 150, 300, or 600 dpi, whole document glass area is scanned. When selected at 1200 or 2400 dpi, 6mm forwarded area from the reference sheet of the document glass is scanned.

* Image handling

When "Read in memory (no file)" is selected, the image is read into the memory, then abandoned after readout. When "Save to TIFF file" is selected for handling an scanned image, the file of "img0.tif" is saved in the folder of the Canon Scanner Test. When scan count is set at 2 or more, the file of "img0.tif", "img1.tif", "img2.tif" ... are saved.

File space to be saved is as follows.

75 dpi : 1.5MB, 150 dpi : 6.5 MB, 300 dpi : 26 MB

600 dpi : 105 MB, 1200 dpi : 7.5 MB, 2400 dpi : 30 MB

Note : Confirm before scanning that the available disk space on the HDD in which the Canon Scanner Test is installed exceeds above file space.

5. Film Scan

Select “Film Scan” from the “Function” menu to display as shown in Figure 5-12 (Windows), Figure 5-13 (Macintosh).

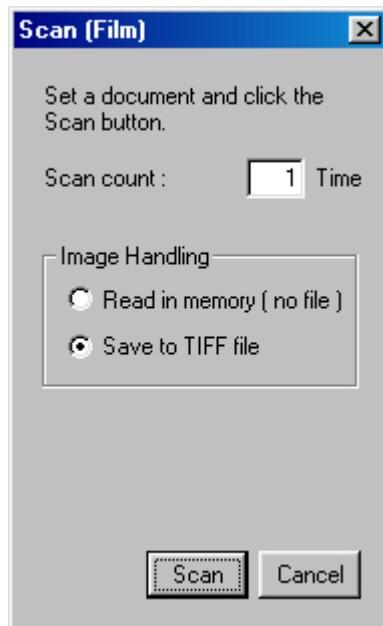


Figure 5-12

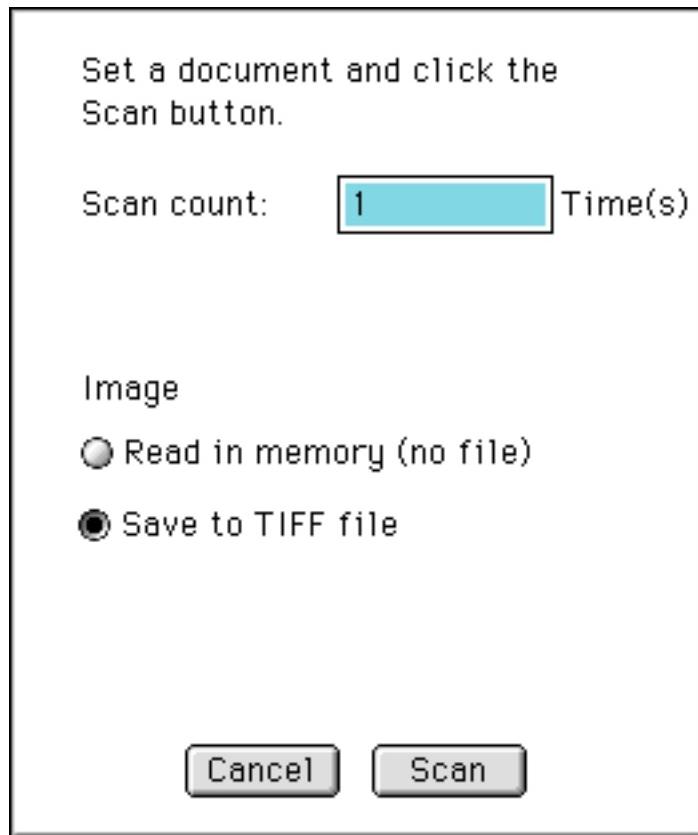


Figure 5-13

Only an upper right frame of the 35mm sleeve film guide can be scanned (shaded area in Figure 5-14.)

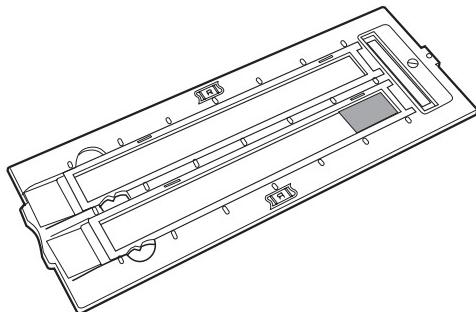


Figure 5-14

* Scan count

Set a number from 1 to 100. When 2 or more is set and "Save to TIFF file" is selected, only a file of specified count is saved.

* Image handling

When "Read in memory (no file)" is selected, the image is read into the memory, then abandoned after readout. When "Save to TIFF file" is selected, two image files scanned by FAU lamp and IR LED are saved. "Color24_0.tif" and "IR_0.tif" are saved in the folder of the Canon Scanner Test. IR.tif is an image of only dirt or dust on the film when FARE function is used. If FARE function does not normally work, IR.tif image appears all black. When scan count is set at 2 or more, the file of Color24_0.tif/IR_0.tif, Color24_1.tif/IR_1.tif... are saved.

File space to be saved is as follows.

Color24_0.tif (1200 dpi) : 5.6 MB, IR_0.tif (1200 dpi) : 5.6 MB

Note: When scanning a film, the scanned image is lighter in color than the original film, because the image is not subjected to the image processing yet.

E. Error Message

1. “**Unable to find the scanner. Check if the cables are connected properly.**”

Cause : Scanner is not detected by the host computer.

Corrective Action : Refer to the “II. Troubleshooting Flowchart”.

2. “**Failed to read scanner information.**”

Cause : Scanner is not detected by the host computer.

Corrective Action : Refer to the “II. Troubleshooting Flowchart”.

3. “**Failed to create a file.” “Failed to open a file.” “Failed to close a file.” “Failed to write-in a file.”**”

Cause : Canon Scanner Test is started from a CD-ROM or write-protected HDD.

Corrective Action : Copy the Canon Scanner Test on a writable HDD to use.

4. “**Scanner has problem.” “Failed to execute scanner self test.”**”

Cause : Scanner is not detected by the host computer.

Corrective Action : Refer to the “II. Troubleshooting Flowchart”.

5. “**Failed to allocate memory.**”

Cause : Scanner is not detected by the host computer.

Corrective Action : Refer to the “II. Troubleshooting Flowchart”.

CHAPTER 6

PARTS CATALOG

FIGURE 001 6-2

FIGURE 100 6-4

CanoScan 8000F

FIGURE 001

ACCESSORY

